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WHAT MAKES A BOOK READABLE

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THE BAKER & TAYLOR COMPANY  
NEW YORK

THE CAMBRIDGE UNIVERSITY PRESS  
LONDON

THE MARUZEN-KABUSHIKI-KAISHA  
TOKYO, OSAKA, KYOTO, FUKUOKA, SENDAI

THE COMMERCIAL PRESS, LIMITED  
SHANGHAI

# WHAT MAKES A BOOK READABLE

WITH SPECIAL REFERENCE TO ADULTS OF  
LIMITED READING ABILITY

AN INITIAL STUDY

BY

WILLIAM S. GRAY, PH.D.

*The University of Chicago*

AND

BERNICE E. LEARY, PH.D.

*St. Xavier College, Chicago*



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## PREFACE

**I**N A society like our own some ability to read is attained by all but a small minority. This is the consequence of a long-established belief that literacy is essential to intelligent citizenry. Social enlightenment, personal advancement, enrichment of experience, wholesome enjoyment of leisure—all are enhanced by the ability to read easily and understandingly whatever interprets and illuminates the phenomena of life.

Unfortunately, however, a surprisingly large number of adults are not interested in reading or are unable to find in the content of available material that which meets their particular interests. Furthermore, about 50 per cent of our population cannot read with ease and understanding much of the reading material now available for adults. In recognition of the growing need to serve more effectively this great mass of people, the American Library Association and the American Association for Adult Education have attacked the problem continuously since 1926 through such agencies as the joint Committee on the Reading Interests and Habits of Adults and the Subcommittee on Readable Books. The activities of the former have included a summary of facts about adult reading, intensive studies of adult reading interests and preferences, and searching inquiry into the nature of adult reading materials, the results of which are reported in part in this volume. The activities of the subcommittee have been directed toward the preparation of lists of readable books for adults of limited education. Among the conclusions reached by that committee is one of particular significance at this time, namely, that many good books fall short of being readable for the average reader in points that might have been met quite easily. If such conclusions are valid, the deficiency is doubtless due, in part at least, to lack of information among authors and publishers relative to the factors which

make a book readable for different kinds of readers. It seems apparent also that appropriate techniques are essential in determining the right book for the right reader. With these conclusions and interpretations at hand, the study reported in this volume was undertaken.

The purpose of the study is threefold: to make an initial survey of current opinion concerning what makes a book readable for adults of limited reading ability; to study objectively a small but important area of readability commonly designated "ease" or "difficulty"; and to suggest possible applications of the findings to the work of librarians in selecting the right book for adult readers as well as to the task of writers and publishers in preparing readable materials for different reading groups. That we are keenly interested in the specific findings of this study and their practical application is to be expected. We are equally concerned, however, with the possibility of applying objective procedures to the study of the wide range of additional problems relating to readability. The present investigation has led to the conviction that such procedures are both possible and practicable, and what is even more important, probably, it has suggested numerous possibilities of continued productive research in this field.

In order to achieve the most valuable results in the further study of readability, there is urgent need for active co-operation of all who are professionally interested in the problem. Specialists in the field of adult education, librarians and readers' advisers, authors and publishers, together with investigators who have been studying special phases of readability, should share experiences and findings, pool judgments, and define a broad program of investigative activities which will attack systematically and thoroughly the various problems involved and make practical application of the findings. Throughout the course of such investigations, those to whom detailed responsibilities are assigned should receive the constant counsel and guidance of an advisory committee representing all the interests involved. It is sincerely hoped that provision can be made in the near fu-

ture for such a co-ordinated and intensive study of the many problems of readability that await solution.

Grateful acknowledgment is due to officers of the American Association of Adult Education and of the American Library Association for stimulating interest in this study; to the Carnegie Corporation of New York for funds with which the study was launched; to the Federal Emergency Relief Commission for the assignment of research workers to the project associated with the investigation; to the members of the Reading Habits Committee of the American Association of Adult Education and the American Library Association for their valuable help and guidance throughout the study; to administrators and teachers of adults and to parent-teacher organizations for substantial co-operation in the testing program; to Edgar Dale and Ralph W. Tyler for invaluable technical assistance during the major part of the investigation; to Michael West for critical comments and stimulating suggestions; to Miss Frances Swineford for generous statistical assistance; and to Louis R. Wilson, Douglas Waples, Ralph W. Tyler, John Chancellor, Jennie M. Flexner, and Doris Hoit for reading portions or all of the manuscript and for constructive criticism.

WILLIAM S. GRAY  
BERNICE E. LEARY

April 15, 1935





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## CHAPTER I

### WHAT THE REPORT IS ABOUT

HOW much a person reads and what he reads undoubtedly are determined by many factors. Some pertain to the reader—to his proficiency in reading, to his motives for reading, and to his reading interests and tastes. Others relate to the reading materials—to their accessibility and to their readability. The co-ordination of these two sets of factors for the purpose of getting the right book into the hands of the right reader should go far toward extending and improving reading habits.

But what is the *right* book? In other words, what makes a book readable for a particular reader? This is the general question with which we are concerned. Yet in this report we have not answered the question completely. Nor have we attempted to do so. What we have done is, first, to discover the trend of opinion among librarians, publishers, and teachers and directors of adult education concerning the factors which they believe make a book readable. We have used the findings of this preliminary inquiry to point the way to the major part of the investigation, which is concerned with two problems. One is to ascertain what elements in reading material make it easy or difficult for adults, when the purpose of reading is defined somewhat narrowly; and the other, to discover how these elements may be used in a more accurate estimate of the difficulty of reading material of a similar sort. Throughout the report we have attempted to indicate the types of subsequent research needed to determine what is a readable book, and, therefore, what is the right book for a particular reader.

#### THE PROBLEM IS A TIMELY ONE

There is a conspicuous interest at present in defining, preparing, and selecting readable materials. This may be explained

in part by the fact that never before have readable books had such a wide potential audience. Many forces are at work to increase this audience. Shortening of the working day and the working week, technological unemployment, and a prolonged economic crisis have combined to create an increasing leisure which may be considered potential reading time. Adult education as an organized movement is giving a new sense of direction to the intellectual life of adults. Clubs, forums, councils, and discussion groups are increasing rapidly. Five times as many organized adult groups exist now as in 1929. Social and recreational programs are being supplemented by discussions on controversial issues of social, economic, and political import. Frequently these programs go no farther than the presentation and discussion of a timely topic. Hence they may fail to lead the group to the larger understandings and deeper appreciations to be gained through the educational experience of systematic reading and study. Other programs aim to bring about a more intelligent grappling with vital problems through an understanding of the conditions and forces creating them. To this end related reading courses are outlined to fit the needs and interests of the group. Co-operation is secured from librarians in giving publicity to books bearing on the problem discussed at group meetings. Reading for understanding steadily receives definite encouragement and systematic guidance.

With the New Deal committed to the policy of using its powers to alleviate economic distress, adult education is being utilized as an important step toward recovery. Emergency programs are springing up on every hand. The unemployed are being drawn into the classroom in the rôle of teacher or student. A variety of educational activities are being rapidly initiated. These include teaching native- and foreign-born adult illiterates to read and write English; training persons who are physically handicapped to do some remunerative work; giving vocational training of a new type to adults whose specialized trade is no longer in demand; and extending the general education of persons who are dissatisfied with their past attainments. In the

majority of cases adult students are being guided to find a way out of an economic situation they but partially understand. Inasmuch as the "way out" may lie in the command and interpretation of facts which explain progressive changes and evolving social life in a dynamic world, the place and purpose of reading cannot be disregarded.

But more important than the increase in the number of potential readers is the evidence that a new vigor is actually being developed in systematic reading. This is inspired by a desire for economic security, cultural advancement, or social adjustment. Current demands for reading are singularly common. Readers at all levels of learning are asking for more information about their own vocations and professions—information that will add to their efficiency and tend to create in them a feeling of security.

Few of us can now be content to be specialists in a single field. Our complacency has met uncomfortable jolts as rapid changes in industrial processes and precipitous shifts in social aims and outlooks have outdistanced our understanding or appreciation. As a consequence, we are asking for bodies of information bearing on unfamiliar fields—general information that will give a comprehensive survey of a subject or a penetrating insight into some of its aspects without a bewilderment of technical detail. Escape from reality or interpretation of reality in a good book of fiction, travel, biography, or history is a part of the pleasure every reader hopes to find in reading. Hence, books for this purpose are also a part of the common demand. Materials presenting reliable information on current economic, social, and civic problems are being sought not only by the economist and sociologist but by the ordinarily indifferent layman who has come to want something more than passing propaganda on which to base his hopes and his decisions.

Evidence for this new vigor in reading lies in recent reports from public libraries to the effect that library patronage is increasing rapidly in quantity and quality. In quantity, because enforced leisure, prolonged idleness, and participation in edu-

cational activities all serve as an impetus for immediate reading and study; in quality, because the lifetime reader, who has already acquired the habit of reading for information or for pleasure, is now forced by economic circumstances not only to read more but to borrow rather than to buy the books he reads.

Writers and publishers are making vigorous effort to meet increasing reading demands by preparing readable materials adapted to the varied needs and interests of the general reader. Probably this effort is more consciously directed toward books of general information than toward fiction. This may be explained in part by the interrelation of two circumstances. One is the growing interest manifested by adults in non-fiction, especially non-fiction that carries a flavor of fiction or promises some help in solving a personal problem. Lists of best-sellers tend increasingly to include these types of non-fiction as well as the more serious type of fiction. The second circumstance is the patent need for more informational, non-technical material within the understanding of the reader.

Convincing examples of publishers' efforts to meet new needs and interests are to be found in semi-narrations of history, geography, and other of the sciences, and in brochures of basic information pertaining to social, economic, and political problems. For whom are these materials readable? Their popularity is evidence that among certain classes of readers they are satisfying a need for non-technical information about technical themes. It seems reasonable to assume that they may be readable for the person of average or more than average reading experience and yet be altogether unreadable for the adult who has read few, if any, books, and who has acquired only a fair ability to read. For there is no denying the fact that the reading public is conspicuously stratified when its members are classified with respect to how well they read. What materials are of appropriate difficulty for readers at each level is one of the things this report aims to show.

The evidence to be presented later supports the testimony of librarians and teachers of adult classes that much reading ma-

terial of general adult interest is suitable only for readers at the top stratum. For readers at considerably lower strata of reading experience such material is difficult and abstruse. If, therefore, these persons do a meager amount of reading of informational non-fiction, one explanation may lie in a lack of material adapted to their needs. If they turn to *Dream World* or *Ranch Romances* for their fiction, it may be because relatively little else of equal simplicity is available. For the near-illiterate of still lesser reading ability, reading matter is even more limited. The seriousness of this condition has been emphasized by objective evidence showing that the chief handicap to increasing the reading efficiency of new literates lies more often in a lack of readable materials than in serious disability of the learners.

But how can we know whether a book is readable for a particular reader? When we have the answer to this question we shall have the secret of meeting current reading demands, of getting the right book into the hands of the right reader, and ultimately of extending and improving reading habits.

#### THE PRESENT APPROACH

As stated at the outset, the present investigation is but an initial approach to the definition of a readable book. Therefore, as we outline briefly what this report contains, we shall indicate also what it does not contain.

When we ask whether or not a book is readable, we meet a counter question, Readable for whom? From these two emerge most, if not all, of the issues which at the present time seem to be involved in the total problem of readability. The first directs our attention toward the reading material and the qualities which presumably affect its readability. It is with this question that the present report is primarily concerned. With the second, we face about and look at the reader for whom a book must be satisfying if it is readable. In this case, we have in mind a particular class of reader—one of limited reading ability.

Who is a reader of limited ability? He cannot be identified in terms of years, for his age may range anywhere from sixteen to



ninety, probably. Neither can he be recognized by his occupational interests, for, unfortunately, the limited reader is represented in practically every type of occupation. His educational experience, too, covers a wide range, from little or none to a considerable amount. At least one feature probably characterizes a limited reader. This is his inability to read with pleasure and understanding any but the simplest adult materials, usually cheap fiction or graphically presented news of the day. But how are we to know that the reader of such materials is able to read no better or that the person who reads not at all is unable to read? These are important questions for which we need answers if we hope to improve reading habits.

In this report we have considered the reader primarily from the point of view of his ability to read certain kinds of materials for certain specified purposes. In studying how well he reads, in preference to what he wants to read or what he does read or how much he reads, we do not mean to imply that ability is more important than taste or interest or any other quality in determining whether a particular reader will find a particular book readable. We do maintain, however, that a reader's ability is of great importance in determining how much difficulty he will meet in reading materials prepared for him. And difficulty is the aspect of readability we are studying in greatest detail.

Yet even our study of reading ability is not complete. It is commonly conceded that there is no such quality as general reading ability. There is, rather, a series of specific abilities which a person manifests in reading different kinds of materials for different purposes. Presumably the ability in each case is influenced by the degree of interest he has in the content, by the nature of the outcome desired, as well as by a variety of other factors. A true measure of reading ability, therefore, should be considerably more comprehensive than the measure we have obtained through the use of materials of our own selection, read for the purposes which we have chosen to define. Additional study should be made to discover the degree of relationship be-

tween specific reading abilities of persons whose general ability, if such there is, appears limited.

In investigating the qualities of a book which make it readable for adults of limited ability, we have been forced within the restrictions of a single report to exclude many that are undoubtedly quite as important as the one we have studied—difficulty. To identify some of the other qualities, to classify them into related categories for the purpose of viewing them analytically and synthetically, and to attempt to indicate the type of investigations needed to show their relative contribution to readability are as much as we have been able to do. This we have attempted to do in chapter iii.

Furthermore, we have studied difficulty of reading material only as it is related to structural elements used in the expression of the content; that is, to length and structure of words and sentences, to number and hardness of different words, and so on. Emphasis on these elements is not intended to give them a rank of first importance in determining difficulty. On the contrary, it seems altogether probable that whether an idea is abstract or concrete, whether it is familiar or unfamiliar, are more important issues in determining difficulty than whether that idea is expressed in words of one or several syllables.

Why, then, have structural elements been given precedence in this investigation? The answer lies frankly in the fact that they lend themselves most readily to quantitative enumeration and statistical treatment. Within certain admitted limitations, subjective opinion cannot gainsay the evidence they present. If, therefore, we can show that structural elements bear significant relationship to difficulty, we not only shall have proof that reading materials can be made more readable by attention to form of expression, but we shall have reason to isolate other less tangible elements and attempt to resolve them into objective terms for further investigation.

In the hope that the results of the study may be useful in preparing and selecting readable books for the largest possible audience, we have devoted our attention to the difficulty of

what is termed *general* reading materials. They are prepared for no specialized group. They aim to present no narrow interests. They are designed for the general reader whose reading is carried on without regard for vocational or professional interests. Such reading matter characterizes newspapers, general magazines, and general books of fiction and non-fiction. So varied is the content of this type of material, however, that one is forced to question whether it can truly be termed general reading or whether there actually is any general reader. It may be argued that this material, despite the fact that it is non-technical, represents fairly specific interests of several kinds of readers. Similarly, persons co-operating in the study were of many different sorts, racially and socially. It is impossible to say without further investigation how much these limitations affect our identification of elements of difficulty. Perhaps structural elements are not generally related to difficulty. It may be that their relationship to difficulty is indeed highly particularized, varying with the reader and with the nature of the content read. Far more extended study is needed before this issue can be settled.

Then, again, the elements of difficulty which we have identified in this study operate only when reading is done for the single purpose here defined—to obtain a general impression of what is read in the form of a summary statement. But there are other purposes in reading: to follow the plot of a story, to gather specific details, to evaluate the worth of an expressed opinion, to secure emotional enjoyment, to determine the motive of an author, to support an argument, and to obtain a large number of other outcomes. All of these are adult purposes for reading, the relative importance of which has not been discovered. In the present study we have assumed that adults read most often to get “the gist” of the content, a general notion of what is read. It is to this kind of understanding that the structural elements reported here are related, and it is with respect to this kind of understanding that they are termed elements of difficulty. According to our findings, the number of different words in a selection, the number of prepositional phrases contained in

the selection, and the proportionate occurrence of polysyllables bear a significant relationship to the difficulty a reader experiences in reading to obtain a general impression of the content. The question may well be raised as to whether they would bear the same relationship to difficulty were the reading done for any other purpose.

If elements of difficulty as we have defined them should be found by extended investigation to bear a similar relationship to difficulty, regardless of the purpose for which one reads, then to that extent they might be termed "general" elements of difficulty. If, on the other hand, they should be found to vary in their relationship to the desired outcome, then the definition of elements of difficulty would of necessity be as particularized as the outcomes themselves.

Finally, the use of identified elements in predicting the difficulty of specific reading materials for limited readers is also restricted. For example, in estimating the difficulty of Roosevelt's *Looking Forward*, we have done no more than predict the difficulty it possesses structurally for readers of limited ability who read it to obtain a general impression of the content.

What we have attempted to show thus far is that the findings of this report are not applicable beyond the realm from which they have been derived. The findings with respect to readability pertain to but one aspect, difficulty. This aspect is further restricted to a study of structural elements in reading material related to difficulty when reading is done for the purpose of obtaining a general impression of what is read. The materials studied represent a variety of subjects and presumably a variety of reading interests. The individuals used in the investigation are homogeneous only with respect to reading ability, which is generally limited. The classification of materials as "easy" or "difficult" for readers of limited ability is based solely on structural elements without regard for such qualifying factors as interestingness, familiarity of content, or purpose of reading. It is with all of these qualifications in mind that we present this initial approach to the problem of "What Makes a Book Read-

able." Whatever interpretations are made of the findings presented throughout the report must be in keeping with the qualifications already stated. Interpretations beyond these limitations are wholly unjustified.

In order to give a brief picture of the study as reported in this volume, the remainder of the chapter is devoted, first, to a summary of the steps of procedure followed and the findings obtained in that part of the investigation which is presented in the first six chapters; second, to a survey of the practical applications of the findings suggested in chapters vii and viii; and, finally, to a forward look at the nature of future investigations toward which this report aims to point the way.

#### STEPS OF PROCEDURE

I. The first step in the study was to secure a list of qualities of a book which may contribute to its readability for adults of limited education. In this connection we made a survey of current literature for the purpose of discovering what is being written about readability and what meaning is being attached to the term. It was soon apparent that whereas writers and investigators occasionally mention readable books, they rarely indicate clearly what is implied by the word *readable*.

Because librarians, publishers, and teachers and directors of adult classes manifest growing interest in the question of what makes a book readable for a particular reader, we sent letters of inquiry to a large number relative to the factors which they believe influence readability. A detailed account of the procedure followed is presented in chapter ii. A total of 288 suggested factors was compiled from approximately 100 responses to the inquiry. They were classified into twenty-four general aspects under four major categories: *format, general features of organization, style of expression and presentation, and content*. The classified list appears in Appendix A. To supplement this list, reactions were also secured from 170 library patrons who came to readers' advisers for guidance. These reactions were stated in terms of factors which they believed made a book readable or non-readable.

The findings thus obtained were not intended to solve the problem of what makes a book readable. Their use was confined to a preliminary definition of a series of problems about which facts are needed before a book can be labeled "readable" or "unreadable" for a particular reader. One aspect of readability proposed by the findings of this survey was isolated for intensive study. This relates to ease or difficulty of reading material, as determined by the presence of certain structural elements of written expression that are related to difficulty.

2. Before determining these elements in general reading materials, it was necessary to discover how well adults read such materials. Two series of tests were devised from books, magazines, and newspapers. One contained passages of fiction; the other, non-fiction of a general informational sort.

In giving the tests, an attempt was made to include as many levels of reading ability as possible. Use was accordingly made not only of adults who were attending school and were classified at different educational levels but also of relatively heterogeneous non-school groups. It was hoped that the groups would be sufficiently diversified with respect to abilities, interests, and educational background to give a fair representation of the general reading public and at the same time an adequate sampling of readers of limited ability. A description of the groups tested is given in chapter iii.

The average reading score made on each item by all adults tested was interpreted as the criterion of difficulty for that item. For example, if the average score on one item was higher than the average score on another, the first was assumed to be easier than the second. On the other hand, if the score on the first was lower than the score on the second, a contrary assumption was made. Further information concerning how well adults read was obtained through the use of standardized oral and silent reading tests which interpret reading achievement in terms of grade norms.

3. Ample evidence was found in the average reading scores of persons tested on the passages from books, magazines, and newspapers to indicate that reading materials represent varying

degrees of difficulty. Our next step, therefore, was to discover what elements in those materials influence difficulty. We accordingly analyzed each item for variants in expression which might be related to ease or difficulty. Some variants pertained to vocabulary—to its range, frequency of usage, and familiarity. Others related to the sentence—to its length, structure, and use. A number of others concerned paragraph development and organization. In all, more than eighty variants of expression were discovered in the items. Of these, sixty-four were found open to quantitative enumeration and were therefore retained for study. They are described in chapter iv.

With this information, it was possible to compare by the method of correlation the difficulty of the test items with each of several elements characterizing their content. This method identifies elements of difficulty in terms of the relationship existing between the occurrence of the expressional variants in the items and the criterion of difficulty, that is, the average reading score made on the items by persons taking the tests.

In a similar way, elements of difficulty were identified for particular groups of readers—*best* readers and *poorest* readers whose classification as such was determined by their reactions to the test, after the manner described in chapter iv. The average reading scores of these groups were taken as criteria of the difficulty which they encountered in reading the test items and were correlated with the occurrence of expressional variants in the items as before. The size of the coefficient of correlation thus obtained indicates the degree of relationship which a particular variant in expression bears to difficulty. For example, a coefficient of .520 for percentage of easy words shows that this element has a closer relationship to difficulty than does percentage of simple sentences with a coefficient of .180.

The direction of the association between any particular element and difficulty is designated by the sign of the coefficient. The elements just cited correlate positively with ease. In other words, a high percentage of easy words and of simple sentences may be taken as an index of *easy* reading material. A low per-

centage of the same elements indicates *difficult* material. A coefficient of  $-.380$  for percentage of polysyllables, on the other hand, indicates a relationship negative for ease and positive for difficulty. Hence, the greater the number of polysyllables in a selection, the greater the degree of difficulty inherent in it.

4. The identification of elements of difficulty in general reading material gave rise to the question of how to use these elements in a more reliable estimate of the difficulty of similar materials. It was believed that the answer would furnish librarians and readers' advisers with a scientific technique for determining what materials are of appropriate structural difficulty for readers of known ability. Furthermore, it would suggest an objective means whereby writers and publishers can determine whether a particular mode of expression will offer a serious obstacle to adults of limited reading ability.

Two techniques were devised for estimating the difficulty of general reading material by the use of the significant elements. These techniques are presented in chapter iv. Their application to specific books, magazines, and newspapers is illustrated in chapters v and vi.

#### THE MAJOR FINDINGS

The most important findings revealed by this study may be summarized as follows:

1. Measurement of the reading ability of 1,690 adults showed a wide variation in achievement, ranging from a grade equivalent below 2.95 to one above 16.95. About one-sixth of the adults tested were found to read with a proficiency normally attained by high-school graduates. Approximately the same number had attained a reading proficiency commonly associated with the lower elementary grades. Between these two extremes range the majority of adults tested.

In all probability, explanation for the low reading achievement reported here lies partly in the selection of cases to which reference has been made on page 11. We were interested not only in discovering how well adults read in general, but in de-



termining how many persons in adult classes, in organized adult groups, and in representative communities have attained some degree of reading facility, and yet are unable to engaged in mature reading activities. The fact that many adults cannot read understandingly a large proportion of available materials justifies a concentration of effort on the problem of ascertaining what makes a book readable for them.

2. Librarians, publishers, and others interested in adult education are in notable agreement with respect to the factors which in their opinion influence the readability of a book for readers of limited ability. All three groups believe that factors of content are of greatest importance. They rate factors of style of second importance; factors of format, third; and general features of organization of least importance. In other words, they believe that a readable book, first of all, must contain content relating to the reader's interest. For example, Fleming's *Brazilian Adventure* may be very readable for one person because he is interested in travel or because he is drawn as by magic to thrill-packed adventures in the jungle. Another may find the same book quite unreadable. He, too, wants a travel story, but of another sort. He prefers to journey happily and informally over well-marked highways, as in Winn's *The Macadam Trail: Ten Thousand Miles by Motor Coach*.

In the second place, according to a majority of the judges, the readable book has a pleasing style. It tells the reader "what he wants to read about" in a manner that makes him look ahead to what is yet to come with anticipation and look back over what has gone before with satisfaction. It neither vexes him with overcomplexity nor with oversimplicity. He can react naturally and favorably to the material because its style of presentation fits his needs and tastes.

The judges are fairly well agreed, also, that an attractive format is of some importance to readability. They believe that the most ambitious reader may be daunted by a 600-page book, even though the content is what he wants to read about and the style agreeable to him. The fact is, he is not that much in-

terested, when all he truly wants to know could be told in a book one-fourth as long. On the other hand, a book may be too condensed and too brief to be readable. Or, again, the illustrations may be too few or too many, too detailed or not detailed enough, too garish or too dull, to satisfy the reader.

Finally, according to the judges, how a book is organized has some bearing on its readability. The organization must make it possible for the reader to get what he wants as easily and quickly as circumstances allow. If it does not, then the book falls just short of being readable.

Although considerable agreement was found among the judges concerning what general qualities make a book readable for readers of limited ability, there was marked diversity of opinion with respect to the individual factors that promote interesting content, pleasing style, attractive format, and appropriate organization. It is this diversity of opinion, shown in later sections of this report, that points to the need of more objective and reliable evidence concerning the qualities of readability.

3. That ease or difficulty of a book is a potent factor in effecting readability for persons of limited education is generally conceded by the readers themselves. They report a certain book readable because "it is easy to understand"; "it has no big words in it"; "it is written so you can read right along." Such testimonies have led us to inquire, What are the elements in a book that make it "easy to understand" and allow the reader "to read right along"? The major part of the present study is devoted to finding an answer to this question.

4. The facts obtained relative to difficulty show that forty-four structural elements of the kind mentioned on page 12 bear some relationship to difficulty. Sometimes the relationship is in the direction of ease, as in the case of simple sentences, personal pronouns, monosyllables, familiar words, and so on. Again, it is in the direction of difficulty, as for long sentences, a widely diversified vocabulary, hard words, and certain other elements that exert a negative influence on ease of comprehension.

More than twenty elements were found to bear significant relationship to difficulty. Among them are such elements as explicit sentences, length of sentence, simple sentences, and words not known to 90 per cent of sixth-grade pupils. Elements bearing little relationship to difficulty include parenthetical expressions, words beginning with *w*, *i*, or *e*, bisyllables, and others. Their influence on difficulty is notably less than that of the most significant elements.

The findings indicate that the relationship of certain elements to difficulty varies also with different kinds of readers. The less able the reader the higher the relationship. For example, the relationship between figures of speech and difficulty is markedly high for readers of limited ability and markedly low for good readers. Hence, the presence of that element cannot be taken as a reliable indicator of the difficulty of the selection in which it occurs, save for a particular kind of reader.

5. The findings show that it is possible to estimate the difficulty of reading materials by the use of any one significant element of difficulty. They show also that a more reliable estimate can be made by the use of several elements. For instance, counting the number of different words in a selection gives a fairly good measure of its difficulty. Counting other elements—prepositional phrases, simple sentences, and personal pronouns—gives a much better indication of difficulty. As determined by the procedures adopted in this study, the best estimate of the difficulty of a selection involves the use of eight elements: number of different hard words, number of easy words, percentage of monosyllables, number of personal pronouns, average sentence-length in words, percentage of different words, number of prepositional phrases, and percentage of simple sentences. That smaller combinations of the same elements give about as good an estimate of difficulty at an expenditure of considerably less time and effort is shown in a later chapter.

6. Interesting findings resulted from an analysis and classification of 350 books according to structural difficulty. Their predicted scores distribute themselves in a close approximation

of the normal curve. Relatively few books were found to be simple enough to rank among materials suited to a reading achievement lower than fifth grade. The largest number rank at an area of difficulty termed "average." They present no greater difficulty from a structural point of view than school readers prepared for sixth grade and junior high school. Some few books among the 350 rank "difficult" or "very difficult," indicating that they afford structural obstacles beyond the comprehension of most adults of limited reading ability.

Each of these findings is based on a quantity of supporting data, tabulated and summarized in the remaining chapters of the report and in the Appendix. Statistical proof for the accuracy and reliability of the findings, their interpretation for practical purposes, and recommendations for supplementing them by further investigations are also presented in later sections of this volume.

#### APPLICATIONS OF THE FINDINGS

The problem undertaken in this study was conceived as one of practical value in improving the reading habits of adults. Ample testimony has accumulated to indicate that obstacles to easy, enjoyable reading add to the already complex task of providing for the varied needs and interests of the reading public. Hence, the identification of difficulty-elements which are inherent in reading materials promises a means whereby those now available may be better adapted to adult readers and new materials be prepared which the largest possible audience will find readable. As other aspects of readability are studied, it should be possible to accomplish both undertakings with still greater success.

How information concerning factors of readability and elements of difficulty may be put to practical use is considered in chapters v to viii. In chapters v and vi we have illustrated how the findings of this study may be used by librarians and others in estimating in an objective and reasonably reliable manner both the relative and the absolute difficulty of general reading

materials. If our ranking of these materials approximates the order of difficulty that librarians would assign to them on the basis of opinion alone, then the study has been worth while in giving objective support to subjective practice. If, on the other hand, the difficulty assigned does not accord with the judgment of librarians, then the worth of the study lies in part in proposing an objective method of estimating reading difficulty and in part in suggesting problems which merit further consideration.

In chapter vii we have recommended for librarians, teachers, and advisers of adult reading certain procedures for estimating how well a person can read and what reading material is of appropriate difficulty for him. Some of these procedures are already in use. Others have been tested experimentally. Still others are purely theoretical. Their usefulness in a practical advisory situation remains to be shown by librarians and others. All of the proposed procedures aim to do the same thing, namely, to translate the ability of the reader and the difficulty of reading material into common terms so that a knowledge of the one will supply knowledge of the other. Information concerning the reader's ability undoubtedly can be secured best by librarians, readers' advisers, and teachers, as has been done in the past. Facts concerning the difficulty of reading material probably should be supplied by some centralized agency whose chief function would be to compute the index of difficulty for general reading material and to make these indexes known among publishers, librarians, and counselors of adult reading.

If we are to accept the evidence that much of the general reading material now available is too difficult for the adult of limited reading experience, and if we can prove that a simplification of certain elements reduces the difficulty of the material, then the preparation of simple books may be greatly encouraged. But the simplification cannot be left to sheer guesswork. Among other things, it must take cognizance of reliable evidence concerning the modes of expression that please or disconcert particular classes of readers. In chapter viii we have suggested tentative standards of difficulty to serve as guides in

preparing material for adult readers at given levels of ability. Inasmuch as these standards pertain only to structural elements of expression, they should be supplemented by others as rapidly as they are identified.

It is not expected that an author can revolutionize his style of expression to fit these standards all at once. In most cases it is not desirable that he should do so. Conscious attention to such matters may prove disastrous. What any writer can do, however, is to become familiar with materials that meet certain standards and then consciously aim to adapt his manner of writing to the level of the greatest possible audience.

#### SUGGESTIONS FOR FURTHER STUDY

It seems important to repeat that the present report is not intended to settle the question of what makes a book readable. On the contrary, its major purpose is to open up the whole question and reveal some of its manifold ramifications. By so doing at least three outcomes are hoped for: first, that it will indicate the possibility of identifying objectively some of the characteristics which determine readability for particular classes of readers; second, that it will suggest the possibility of controlled investigation of these various characteristics now in urgent need of consideration; and, third, that it will pave the way to the development of objective procedures for selecting and preparing readable books to supersede impressionistic judgment.

That the present study of difficulty is not a model to be followed by investigators of other aspects of readability is admitted by the many limitations presented earlier in the chapter. A series of controlled investigations covering all the major aspects of the problem is needed to remove these limitations and to exemplify methods of procedure that will produce the most reliable findings. We propose in this connection that questions of the following sort be considered:

1. To what extent does difficulty of content affect readability for different kinds of readers?
2. What other qualities of content than structural elements are related to difficulty of understanding?

3. How are elements of expression related to difficulty in different kinds of content: history, travel, science, etc.?
4. To what extent is a reader's interest in a selection related to his ability to read the selection satisfactorily, regardless of its structural elements?
5. Does particular reading material present equal difficulty when read for different purposes?
6. Is the difficulty of a selection related to a reader's impression that the selection is easy or hard?
7. To what extent does a reader's familiarity with a subject affect the influence of structural elements on understanding?
8. Are structural elements related to difficulty in the same degree for readers with different racial and cultural backgrounds?
9. How much weight can be given to structural elements in determining the total difficulty of a selection?

It is important that each of these and other problems suggested by this report be subjected to carefully controlled investigation in order that the facts concerning difficulty be made as reliable and comprehensive as possible. When the evidence has been extended far enough to define difficulty for different kinds of readers, reading different types of material for different purposes, it will be possible to carry experimentation in writing much farther than this report suggests. By utilizing elements of difficulty in varying amounts, we may eventually determine the appropriateness of the material for particular groups of readers in a variety of reading situations.

It is also important that such a series of studies be supplemented by further investigation and experimentation of a similar nature with respect to other aspects of readability. With the combined findings of all these efforts to serve as a guide, more reading materials should be produced for adults of limited reading ability, to the end that their present reading ventures will develop ultimately into permanent reading habits.

## CHAPTER II

### WHAT IS A READABLE BOOK?

AS ALREADY mentioned, recent investigations indicate that the quality of reading material which is called "readability" influences directly the reading habits of adults. It seems equally true that accessibility of books promotes wide reading. An essential step, therefore, in improving reading habits is to provide adults with materials that will be readable for them.

But what is meant by the term *readable*? Does it imply only qualities which are inherent in a book? Is it dependent upon individual characteristics of a particular reader? Or does it express a certain relationship between qualities inherent in the book and individual characteristics of the reader? These questions indicate the complexity of the task of selecting and producing readable books for different kinds of readers. One of the first steps in a comprehensive study of the problem is to determine the qualities of a book which may influence its readability.

We have accordingly undertaken, within certain limitations, to discover the meaning librarians, publishers, and others interested in adult education attach to the term "readability." If a book is a composite of several qualities, how much importance do these persons assign to the various components? It is not our intention to arrive at a valid definition of readability from sheer opinion. It is rather to determine the extent to which readability has the same or different meaning for persons engaged in preparing and selecting readable books for others to read.

We have hoped to accomplish at least three other objectives: first, to secure a comprehensive list of the qualities of a book which may contribute to its readability; second, to identify one aspect of readability for more intensive study at this time; and,



finally, to suggest the general character of subsequent studies which are needed before a particular book can be designated readable or non-readable for a particular kind of reader.

CHARACTERISTICS OF A READABLE BOOK AS  
DESCRIBED IN RECENT LITERATURE

An examination of the literature bearing on adult reading shows that an interpretation of the term "readable" occurs with less frequency than does the term itself. A few writers have attempted to define readable materials in terms of a specific kind of reader on the basis of observation or investigation. Others have implied a broad meaning of readability. The majority have referred to readable books but have failed to indicate the meaning which they attach to the word readable.

In the language of the dictionary, a readable book is one "that may be read with satisfaction or interest; that is attractive in style or treatment; that is easy and pleasant to read." There is implied in this definition the idea that the test of a readable book lies in the pleasurable reaction which it creates in the reader by its content, by its attractive style, or by the ease with which it can be read. In the light of this definition, therefore, we need to discover three things: what is interesting to different groups of readers, what style is attractive to them, and what material is easy for them to read. With this information we can then select for a particular group of readers a book that in the terms of the dictionary will be readable for them.

Knowledge is readable, according to James Harvey Robinson, "when it is humanized."<sup>1</sup> In *The Humanizing of Knowledge* he holds that a book for the general reader "with no great surplus of time, preparation, attention or initial interest" must do three things: first, it must enlist the reader's attention; second, the facts and information must be presented in terms and in an order which will be understood by him and will fit into his

<sup>1</sup> James Harvey Robinson, *The Humanizing of Knowledge*. New York: George H. Doran Co., 1923. Pp. 120.

way of looking at things; and, finally, the significance of the information in its bearing on the reader's thought and conduct and his judgment of others should be wisely suggested.<sup>2</sup>

How can these results be attained? When does a book enlist the reader's attention? How can facts and information be presented so that they will be understood? In part, according to Robinson, by means of a subject that is vividly and persistently interesting; in part, through use of the story form, which makes the best and surest kind of appeal; in part, through "good little books, easy to slip into one's pocket or bag"; and, finally, through simplicity of language and style, which is lacking altogether too frequently.

He says,

Most books are simply too long and too hard for even ambitious and intelligent readers. For to be simple is to be sympathetic and to endeavor to bring what one says or writes close up to those one is addressing. . . . And the great art in writing is not to exhibit one's own insight and learning but really to influence those whom one is aiming to influence.<sup>3</sup>

The Subcommittee on Readable Books of the American Library Association has defined a readable book for the middle group of readers ranking between the specialist and the person of extremely academic turn of mind at one end of the scale and the reader of light fiction at the other. For this middle group, the Committee designates a readable book as one having seven characteristics: simplicity of knowledge, non-technical treatment, brevity of statement, fluency, adult approach, vitality, and certain physical features.<sup>4</sup> Although the Committee has made some concessions on several points, it stands firm on two which it believes essential to readability. The book must be simple enough to be understood, and it must have a degree of vitality; otherwise it is not readable. How simple a book must be to be readable for different types of readers and how vitality can be measured are problems suggested by the Committee's point of view.

<sup>2</sup> *Ibid.*, p. 105.

<sup>3</sup> *Ibid.*, pp. 88-89.

<sup>4</sup> Emma Felsenthal, *Readable Books on Many Subjects* (Chicago: American Library Association, 1929), p. 4.

Waples has reached the conclusion from his study of what people actually read that librarians and publishers must find out what the reader wants to read about and what are his preferences concerning author, style, length of treatment, and the like.<sup>5</sup> In this way they may increase the reader's satisfaction with what he reads.

Chancellor's inquiry concerning the suitability of available reading material for native-born adult illiterates and near-illiterates has brought together the opinions of educational workers and librarians who have had experience with the problem either directly or indirectly.<sup>6</sup> The net result of his inquiry shows a general opinion that much of the published material now available for the groups in question fails to be readable for one of three reasons. It is too difficult; it progresses too rapidly in difficulty; or its content is not sufficiently interesting to adults. Since this opinion is based on experience with illiterates and near-illiterates, it is presumably reliable. It suggests the need for objective investigation to determine what elements in materials contribute to difficulty for such readers; how rapidly a story can progress before it becomes disconcerting; and what content is most interesting. Knowing the answers to these questions, we can select books which will be more readable for these readers, if such books exist; or we can prepare materials better suited to their needs and tastes.

A recent study by Conrad is concerned with the appropriateness of elementary school reading texts for use in teaching adult illiterates and near-illiterates.<sup>7</sup> The findings show that three factors influence vitally the choice of books—the quality of vocabulary, repetition of words, and good sentence structure. Three

<sup>5</sup> Douglas Waples, "The Relation of Subject Interests to Actual Reading," *Library Quarterly*, II (January, 1932), 42-70.

<sup>6</sup> John Chancellor, "Available Reading Material for Native-born Adult Illiterates and Near-Illiterates." Mimeographed. Washington, D.C.: Bureau of Prisons, Department of Justice, 1933. Pp. 35.

<sup>7</sup> L. R. Conrad, "Investigation in Reading Material for Native Adult Illiterates and Near-Illiterates." Mimeographed. Chillicothe, Ohio: United States Industrial Reformatory, 1933.

other factors—hygienic requirements, nature of the content, and interest factors—are of slightly less importance. Conrad has gone so far as to describe what seem to be the requisites of reading material appropriate for the men in his prison-school. It is significant that all the requisites are aimed to make the material easy to read, implying that for this group material which can be read is readable.

The foregoing discussion indicates the variety of meanings which writers attach to the term "readable." Some are based on sheer opinions; others, on observation and experience; and others, on experimentation. It seems important to note that despite the variety of interpretations offered by different writers, two aspects are generally held essential to a readable book. One is interesting content, and the other, a presentation simple enough to be understood. The extent to which these two aspects are commonly considered important by librarians and others who advise adults in their reading, by publishers, or by persons interested in adult education, will be shown in subsequent sections of this report.

#### COMPILING A LIST OF POSSIBLE FACTORS THAT MAY INFLUENCE READABILITY FOR READERS OF LIMITED ABILITY

According to the plan outlined in this chapter, we have undertaken to discover the trend of opinion relative to the meaning of readability for the purpose of defining lines of investigation needed in the field. In order that all who participated in the study might have opportunity to consider the same factors, a list was prepared which included as many potential factors of readability as could be obtained. The list was compiled from responses of a large number of librarians, readers' advisers, publishers, and other persons interested in adult education who were questioned as to the factors which they believe contribute to readability for adults of limited education. It was desirable that their replies to the inquiry should not be influenced by suggestion. The term "readability," therefore, was not defined. In-

stead, each person was asked to interpret the term for himself and then to define or explain quite explicitly any factor he listed. Approximately one hundred replies were received to the inquiry. A few librarians good-naturedly admitted some reluctance about "going on record" concerning factors which make books readable, despite the fact that they are daily engaged in passing judgment on the readability of particular books.

When factors listed in the various replies were examined, it was found that they could be classified into a single list. Certain ones were grouped as components of a larger aspect of readability, and these, in turn, as components of a still larger aspect. For example, suggested factors included "numerous illustrations," "cartoon-type of pictures," "illustrations adjacent to the text," "appropriate diagrams," "colored inserts," and so on. These factors obviously belong to a single aspect, illustrations, which is a subdivision of format.

The classified list of 289 factors as finally compiled contained four major categories designated by Roman numerals: (I) Format or Mechanical Features, (II) General Features of Organization, (III) Style of Expression and Presentation, and (IV) Content. Under each category were placed a number of related general aspects designated by Arabic numerals. Under each of these were listed the specific factors, *a*, *b*, *c*, and so on. A section of the classified list is shown on p. 27.

Since direct contradiction occurred between certain factors and a degree of overlapping among others, the composite list was by no means free from inconsistencies. For example, one person held that a readable book for a reader of limited ability should employ questions and answers; another stated that it should use no questions and answers; whereas a third believed that a judicious use of questions and answers promotes readability. All three opinions appear in the composite list. Since no factor was tabulated unless it had been suggested in response to our inquiry, the list was obviously not exhaustive.

A SECTION FROM THE LIST OF POSSIBLE FACTORS  
OF READABILITY IN BOOKS

	A	B	C
<b>I. FORMAT or MECHANICAL FEATURES</b>			
<b>1. Size of Book</b>			
a. Small			
b. Average			
c. Larger than a textbook			
d. About 5" by 8"			
e. About 14 cm. by 16 cm.			
f. Light-weight			
g. Comfortable			
h. Not forbidding			
i. About 20 cm. by 14 cm.			
<b>2. Number of Pages</b>			
a. Brief			
b. About 50 pages			
c. About 75 pages			
d. About 84-96 pages			
e. About 300 pages			
f. About 125-150 pp.			
g. About 200 pages			
h. About 300-400 pp.			
i. About 200-300 pp.			
<b>3. Quality of Paper</b>			
a. Opaque			
b. Dull-surfaced			
c. Even-colored			
d. White			
e. Not white			
f. Pleasant to touch			
g. Good			
h. Glossy			
<b>4. Kind of Type and Printing</b>			
a. Large			
b. Good-sized			
c. Medium			
d. Small			
e. About 11 pt.			
f. About 12-14 pt.			
g. Not under 8 pt.			
h. No. 7, Old Style			
i. 4 pts. leading			
j. Spacing, like double typing space			
k. Well spaced			
l. Open face			
m. Black ink			
n. Dull ink			

TECHNIQUE OF OBTAINING OPINION RELATIVE TO  
FACTORS OF READABILITY

In order to determine the relative importance attached to the factors of readability, the classified list was sent to the persons who had answered the original inquiry and to a number of additional librarians and publishers. They were asked to evaluate each major category and each general aspect for its influence on readability, and to indicate what they believe to be the importance of specific factors for readers of limited ability. The following directions were given:

## METHOD OF SCORING AND CHECKING

Three columns are set up at the right of each page of listed factors, designated A, B, C. Column A is to be used for checking specific factors; Column B, for evaluating general aspects; and Column C, for evaluating the four major categories.

Examine the complete list of factors and note the general aspects and categories into which they have been classified, in order to familiarize yourself with the general set-up of the list. You will note that there is direct contradiction among some factors, apparent overlapping of others, and close similarity among others. This has resulted from including all possible factors of readability suggested by the correspondents.

*First step.*—Look over the factors, designated *a, b, c*, etc., and decide which ones, in your judgment, make for readability. Indicate your decision by checking such factors ( $\checkmark$ ) in Column A. If you wish to show that certain factors are of special significance, indicate by ( $\checkmark\checkmark$ ). Leave blank spaces after factors that you believe are insignificant or do not make for readability. Space has been left for additional factors. Please include any that you think have been omitted.

*Second step.*—Consider the total value of the general aspects 1, 2, 3, etc., in each major category as equal to 100 points. Look over the general aspects in Category I, and evaluate their relative importance in promoting readability. Distribute the total value, 100 points, among these subdivisions to indicate their proportionate values. Write the values in Column B, opposite each. Be sure that the sum of all values assigned to aspects 1, 2, 3, etc., equals 100 points, which is the total value of Category I.

Next, do the same thing for Category II, then for Category III, and finally for Category IV. In each case, distribute 100 points among their respective general aspects, writing in Column B. Each category should total 100 points.

*Third step.*—Now consider the total value of all four categories, I, II, III, IV, as equal to 100 points. Decide what proportion of 100 points best represents the value of each category in influencing readability. Distribute the 100 points among the four categories, as your judgment dictates. Write the assigned value in Column C after each category. The sum of the four values should total 100 points.

## THE NATURE OF THE REPLIES

About ninety persons checked and returned the list, having followed all or part of the directions. Occasionally they omitted the first or second step. In every case, however, they carried out the directions concerning the third step. It is probably easier to evaluate the relative influence of large categories on readability than to judge the importance of specific factors.

Some of the judges had acquired definite views concerning the factors which contribute to readability and checked the list with considerable assurance. Others approached the list with extreme conservatism, declaring that there was no item which could be endorsed or eliminated without some qualification. A few chose to check only the factors that they believe generally contribute to readability, since their experience with individual readers had been limited. Similarly, several publishers checked those factors which they consider indispensable in the actual practice of producing readable books for all readers.

A number of judges misunderstood our motive and felt that we were attempting to obtain merely a general impression about readability. Hence they objected to checking the list, "since there can be no generalization concerning factors of readability." One publisher stated, "I can't bring myself to the point of believing that the factors of readability can be stabilized and labeled as this investigation attempts to do." To this statement we are in mingled accord and disagreement. In accord because an inquiry such as this one cannot establish a particular aspect of a book as a factor of readability, nor does it attempt to do so; in disagreement, because it seems tenable to assume that when the reading interests, tastes, capacities, and needs of certain kinds of readers have been discovered, we shall be able to define a readable book for them.

## ORGANIZATION OF THE DATA

Seventy-nine judges carried out all directions of the inquiry. Of this number thirty-four are librarians or readers' advisers, sixteen are publishers, and twenty-nine, directors or teachers of



adult classes. Their opinions are recorded in this chapter in the following order:

First, the relative weight assigned to the four major categories is summarized in terms of the mean judgment, the standard deviation of the mean, and the range for all judges as well as for the three groups of judges. The mean judgment is considered the "characteristic" weight of each category (within certain statistical limitations). That the inquiry should reveal some discrepancies of opinion was expected. The degree of these discrepancies among the different groups of judges and among judges within a group is indicated by the standard deviation and the range.

Judgment concerning the four major categories has been given first for two reasons. One is to give a broad view of factors of readability as they are evaluated by the judges; the other, to indicate the order of presentation to be followed later in reporting opinion concerning each category.

After the evaluation of the four major categories, judgment relative to content is summarized according to the separate factors believed to contribute to readability and according to the relative influence of the factors when classified into general aspects of content. Opinions concerning style of expression and presentation are given next, followed by a record of opinions pertaining to factors of format. Finally, summarized tabulations are given bearing on features of organization which all groups of judges consider of some significance for readability.

JUDGMENT CONCERNING THE RELATIVE INFLUENCE OF THE  
FOUR MAJOR CATEGORIES OF POSSIBLE  
FACTORS OF READABILITY

Table I presents the summary of opinion relative to the four major categories into which possible factors of readability have been classified. The same facts are shown graphically in Figure 1.

Factors which all judges believe have greatest influence on readability belong to content. Its mean value is 33.64 per cent.

Second in influence are factors of style, with a mean value of 30.71 per cent. According to the combined opinion of all judges, then, if you give a reader a theme which interests him, that is, one that he wants to read about, you have the problem of readability one-third solved. Furthermore, if in addition you

TABLE I

SUMMARY OF JUDGMENT CONCERNING THE RELATIVE INFLUENCE ON READABILITY OF THE FOUR MAJOR CATEGORIES

MAJOR CATEGORY	ALL PERSONS			LIBRARIANS			PUBLISHERS			OTHERS INTERESTED IN ADULT EDUCATION		
	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range
I. Format.....	20.26	7.68	45-5	24.13	7.64	45-7	17.08	5.20	25-10	17.92	6.27	30-5
II. General Features of Organization.....	15.38	7.04	40-3	15.71	6.59	26-3	15.42	6.27	30-5	15.20	7.24	40-5
III. Style of Expression and Presentation.....	30.71	9.17	50-0	32.74	8.39	50-20	32.92	8.27	50-25	27.50	9.24	40-5
IV. Content.....	33.64	13.11	75-7	27.42	9.95	50-7	34.58	12.83	50-10	39.37	12.54	75-20

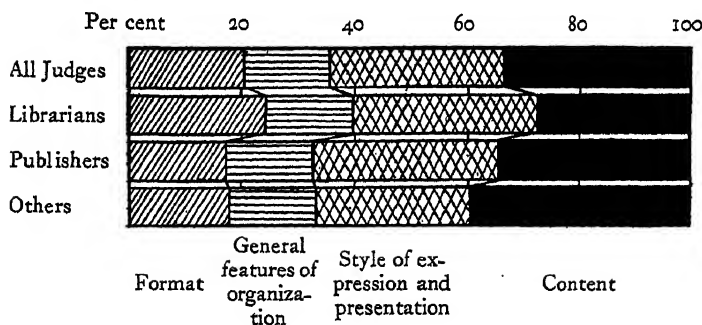


FIG. 1.—Opinion concerning the influence of classified factors on readability

find out the style which best fits his needs and tastes, that is, the scope of vocabulary and the kind of sentences which he reads easily and the type of presentation he reads with pleasure, then you have the final solution of the problem close at hand. At least it is 64.35 per cent solved, as measured by the combined mathematical judgment of seventy-nine judges.

Publishers and others interested in adult education also give content a place of first importance, as indicated in the table by their respective mean values of 34.58 per cent and 39.37 per cent. Publishers, however, give style so nearly the same value on the average that no significant precedence can be claimed by content. Directors and teachers of adult education, on the other hand, generally consider content of greatest worth, one person giving it a value of 75 per cent, and none less than 20 per cent. Librarians as a group consider style of slightly greater influence on readability than content.

All groups agree fairly well that less than 40 per cent of the total contribution of all factors toward making a book readable is made by format and organization. It appears on the basis of this evidence that librarians, publishers, and others would make readability depend finally upon agreeable content and style. Nevertheless, they recognize the importance of attractive format, size, weight, general mechanical set-up, and a desirable organization. How closely this opinion coincides with the actual facts remains to be determined by experimentation with different kinds of books among many kinds of readers.

In general, the degree of variability of individual judgment is about the same for all groups, except with respect to content. A comparison of the standard deviations ( $\sigma$ ) for this category shows that the mean assigned by librarians is more nearly representative of all values than is the mean value of any other group. That is to say, since 9.95 is smaller than other standard deviations, the mean value of content, 27.42, is a more reliable value than are the mean values obtained for publishers and persons interested in adult education. It appears, therefore, that librarians are in closest agreement as to the influence of content on readability. The least diversity of opinion for all categories except content is found among publishers. This agreement is to be expected. The very nature of the publishing enterprise probably creates in the publisher a more critical attitude toward a book as a whole than exists among the other groups of judges.

## WHAT FACTORS OF CONTENT INFLUENCE READABILITY?

We have just summarized opinion relative to the influence on readability of factors classified into major categories. We have shown also that factors of content are considered of greatest importance by the mean evaluation of all judges. But content is a general quality that may be thought of in many ways, in terms of a specific theme, in terms of its appeal to the reader, and so on. It seems important, therefore, to examine the various aspects of content as they have been classified in the check-

TABLE II

FACTORS RELATED TO CONTENT RANKED OF GREATEST AND LEAST IMPORTANCE  
TO READABILITY BY EACH GROUP OF JUDGES

Factors Ranked in Highest One-Fourth of 47 Factors	Factors Ranked in Lowest One-Fourth of 47 Factors
<p>2a* Timely subject matter</p> <p>1g Theme—people and personalities</p> <p>1m Theme—travel and business</p> <p>1l Theme—romance and action</p> <p>1n Theme—one of human interest</p> <p>2j Interesting subject matter</p> <p>1d Theme—adventure</p>	<p>1c Theme—history not important</p> <p>1j Theme—not just ideas</p> <p>1k Theme—not theories</p> <p>1s Theme—opposed to reality</p> <p>1q Theme—not analysis of human experience</p>

\* Refers to classified items in Appendix A.

list in order to determine which ones are held generally important or unimportant. Since the judges who co-operated in the inquiry are actively engaged in producing, selecting, or recommending books for adult readers, agreement concerning specific factors that presumably affect readability is to be expected.

Table II lists the factors of content ranked of greatest and least importance by each of the three groups of judges, importance being determined by the number of times the factors are checked. A factor is considered of greatest importance if it ranks above the third quartile, that is, in the highest one-fourth, in a distribution of all factors according to the number of times each is checked by each group of judges. A factor ranking below the first quartile, that is, in the lowest one-fourth of the

same distribution, is considered of least importance. It must be emphasized that the rank of a particular factor solely on the basis of number of times it is checked does not define its actual degree of importance. It rather defines the relative importance which groups of judges have assigned to it. It is altogether probable that a highly important factor may be given little weight because in the absence of objective evidence only a few far-seeing persons in a group have grasped its true significance. Data presented in Table II, therefore, show no more than the trend of opinion among all groups of judges with respect to factors of content which they believe make a book readable for readers of limited ability. In Tables LXVI, LXVII, and LXVIII, Appendix B, are listed the factors ranked of greatest and least importance by librarians, publishers, and others interested in adult education, respectively.

Examination of Table II shows that in the opinion of most judges the content of a readable book for readers of limited ability should be timely (*2a*) and interesting (*2j*), and that its theme should be of human interest (*1n*), about people and personalities (*1g*), travel and business (*1m*), romance and action (*1l*), or adventure (*1d*). According to the opinion of librarians and other persons interested in adult education, the most important aspect of content is timeliness, irrespective of the theme presented. Publishers, on the other hand, give more frequent mention to the nature of the theme, ranking adventure (*1d*) first; science and invention (*1e*) second; human interest (*1n*) third; and so on. A timely topic (*2a*) ranks seventh. The majority of judges in all groups "double-checked" *1g* and *1d* to indicate that they believe themes about people and personalities and about adventure are of special significance in promoting readability. Librarians have observed profound interest in these themes among readers of limited ability. Accordingly, some have endorsed the simplification of popular novels of such authors as Zane Grey and Oliver Curwood, for the near-illiterate reader.<sup>8</sup>

<sup>8</sup> Chancellor, *op. cit.*, p. 5.

Is it important that the content of a book for limited readers be "not just ideas" (1*f*), "not theory" (1*k*), that it be "opposed to reality" (1*s*), or that it avoid "analyzing human experience" (1*q*)? Some individual judges expressed such a belief in our preliminary survey. However, when they evaluated the factors later they generally considered them of little importance. In other words, a writer need not avoid theories or realities when writing for limited readers provided that he is concerned with what is timely and of human interest. Although the observations of librarians with respect to what people want to read are helpful, more scientific data are available. Objective evidence concerning the common interests of groups of readers, compiled by Waples and Tyler, answers the perplexing question concerning what people want to read about.<sup>9</sup> This evidence undoubtedly solves one of the major problems of readability.

#### THE RELATIVE IMPORTANCE OF GENERAL ASPECTS OF CONTENT

Table III summarizes the value attached to general aspects of content after the manner described on page 30. The mean

TABLE III

SUMMARY OF JUDGMENT CONCERNING THE RELATIVE INFLUENCE ON READABILITY  
OF GENERAL ASPECTS OF CONTENT

GENERAL ASPECT	ALL PERSONS			LIBRARIANS			PUBLISHERS			OTHERS INTERESTED IN ADULT EDUCATION		
	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range
1. Theme.....	47.36	11.02	80-10	46.77	8.96	75-30	47.25	10.20	67-30	46.52	13.23	80-10
2. Nature of subject matter.....	37.24	9.31	75-15	37.42	6.82	50-25	34.42	6.60	50-30	40.20	12.01	75-15
3. Unity of content.....	15.40	8.79	35-0	15.81	9.16	35-0	18.33	8.98	30-10	13.28	8.06	25-0

values (Fig. 2) show an unmistakable similarity of opinion among the three groups of judges. Theme is assigned highest value by all groups; nature of subject matter, second highest;

<sup>9</sup> Douglas Waples and Ralph W. Tyler, *What People Want to Read About*. Chicago: University of Chicago Press, 1931. Pp. 312.

and unity of content, lowest value. These ratings are in harmony with the tabulations presented in the previous section.

It is apparent from the size of the standard deviations that closest agreement of opinion persists among librarians, and least agreement among persons interested in adult education. Mean opinions of the latter group regarding theme and nature of subject matter are considerably less reliable than the opinions of other groups.

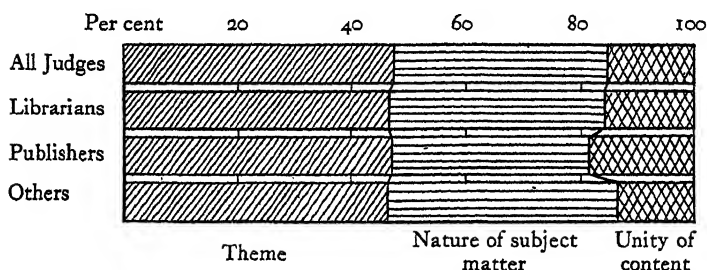


FIG. 2.—An evaluation of the general aspects of content

#### FACTORS OF STYLE CONTRIBUTING TO READABILITY

According to the data presented in Table I, style ranks second in importance among the four major categories when the opinions of all judges are taken together. It may be recalled, however, that librarians as a group consider style the greatest contributor to readability. This opinion is held by many individuals in all groups. For example, one publisher dismisses the entire problem of readability in the following words: "What is a readable book? It is a good story, well told." A readers' adviser states, "When the reader of limited ability wants a readable book, he wants a simple, pleasing style, an easy flow of expression." Another says, "I feel very strongly that among the qualities that contribute to readability, elusive qualities of style . . . and expression are foremost." This latter point of view is expressed again by a director of adult classes as follows: "For good reading, style is paramount."

Most of these and similar statements are followed by a list of

specific factors pertaining to style of expression and presentation which the writer considers important. As a result of the emphasis which it receives, this category, designated No. III in the classified list, contains the largest number of individual factors.

When the total list was submitted to the judges for checking, it was encouraging to discover a surprising agreement among all

TABLE IV

FACTORS RELATED TO STYLE OF EXPRESSION AND PRESENTATION RANKED OF GREATEST AND LEAST IMPORTANCE TO READABILITY BY EACH GROUP OF JUDGES

Factors Ranked in Highest One-Fourth of 116 Factors	Factors Ranked in Lowest One-Fourth of 116 Factors
<i>1t</i> Adult vocabulary <i>7d</i> Lucid, clear presentation <i>2f</i> Sentences not too involved <i>8w</i> Start with the familiar <i>5a</i> Enthusiastic attitude of the author <i>8u</i> Adult approach <i>1k</i> Non-technical vocabulary <i>4c</i> Chapters stimulating at beginning <i>2b</i> Sentences varied in length <i>7a</i> Direct presentation <i>1s</i> Informal vocabulary <i>4d</i> Chapters promising at end <i>6a</i> Narrative style <i>6c</i> Descriptive style <i>3b</i> Paragraphs varied in length <i>4b</i> Clearcut chapters	<i>1h</i> Short words <i>1r</i> Non-classical vocabulary <i>7o</i> Distinguished style <i>5f</i> Emotional, sentimental attitude of author <i>1n</i> Vernacular (even colloquial) vocabulary <i>6e</i> Poetic style <i>7e</i> Charming style <i>7f</i> Picturesque style <i>8l</i> Parables <i>1b</i> Vocabulary limited to 1000-1500 words <i>1e</i> Vocabulary easy enough for 12-14-year-old child <i>5c</i> Moralizing attitude of author <i>8d</i> Exaggeration <i>8z</i> Phantasy

groups regarding the factors of style which they believe are important in readable material. Table IV shows the factors of greatest and least importance according to the combined opinion of the three groups of judges. In Appendix B, Tables LXIX, LXX, and LXXI, is given the opinion of each individual group concerning important factors of style in a readable book.

The weight of opinion of all judges is that an informal (*1s*), non-technical (*1k*), adult (*1t*) vocabulary is an important con-



tribution to readability, whereas a vocabulary limited to 1,000–1,500 words (1*b*), easy enough for a 12–14-year-old child (1*e*), is not essential. Neither is a vocabulary of short (1*h*), non-classical words (1*r*), expressed in the vernacular (1*n*) essential. These opinions are in harmony with the consensus of workers with adults. This group holds that the 4,000 most commonly used words found in standard word lists should certainly furnish the foundation of materials written for adults of limited reading ability. They believe it is inadvisable, on the other hand, to confine the vocabularies to these lists at the expense of adult words within the experience of the reader.<sup>10</sup> Contrary opinion is held by the advocates of an experimental vocabulary, such as *Basic English*, which is designed “to make it possible to say almost everything we normally desire to say in 850 words.”<sup>11</sup>

With respect to the importance of factors which are classified as stylistic devices, judges agree very generally that readable material should have an adult approach (8*u*), starting with what is familiar (8*w*) and within the reader’s scale (8*s*). Other devices of style, such as exaggeration (8*d*), parables (8*l*), and phantasy (8*z*), were either left unchecked or were checked and qualified by such statements as “if appropriate to the subject,” “if the subject-matter requires,” or “depending on what the author is attempting to do.” Judges might well have added “if we know what kind of reader finds these devices an aid to readability.” For the basic consideration in determining readability of a particular book is whether a particular reader finds that book easy and pleasant to read.

#### THE RELATIVE IMPORTANCE OF GENERAL ASPECTS OF STYLE

By the average rating of all groups of judges shown in Table V and Figure 3, vocabulary, No. 1, is given the highest value among the eight aspects of style, and chapters, No. 4, the lowest value. A marked similarity is observable among the mean val-

<sup>10</sup> Chancellor, *op. cit.*, p. 16.

<sup>11</sup> C. K. Ogden, *Basic English*. London: Kegan Paul, Trench, Trubner & Co., 1932. Pp. 96.

ues assigned by the three groups. Vocabulary ranks first in all cases. Style of presentation generally takes precedence over stylistic devices, which take precedence over sentences. They in turn tend to rank above attitude of the author. This aspect

TABLE V

SUMMARY OF JUDGMENT CONCERNING THE RELATIVE INFLUENCE ON READABILITY OF GENERAL ASPECTS OF STYLE OF EXPRESSION AND PRESENTATION

GENERAL ASPECT	ALL PERSONS			LIBRARIANS			PUBLISHERS			OTHERS INTERESTED IN ADULT EDUCATION		
	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range
1. Vocabulary.....	20.43	8.22	50-8	20.00	8.38	50-8	23.50	8.98	40-12	18.50	5.34	30-10
2. Sentences.....	11.38	4.32	25-5	9.96	3.04	20-5	12.75	3.70	20-5	12.25	5.45	25-5
3. Paragraphs.....	8.29	4.05	25-0	7.58	3.11	15-0	8.33	3.23	15-3	9.20	5.12	25-5
4. Chapters.....	6.63	3.70	20-0	6.16	3.90	20-0	5.75	2.97	10-0	7.64	3.56	15-0
5. Attitude of author.....	12.32	7.09	30-0	13.81	7.53	30-0	10.17	7.57	25-0	11.95	5.95	25-3
6. Method of presentation.....	10.43	5.61	20-0	11.25	5.76	20-0	9.58	5.49	20-0	9.91	5.61	20-0
7. Style of presentation.....	17.00	6.25	40-5	17.42	5.98	30-10	17.00	8.31	40-5	16.68	5.62	26-5
8. Stylistic devices.....	13.51	6.40	30-0	13.81	6.50	30-3	12.92	7.08	30-0	13.86	5.53	25-5

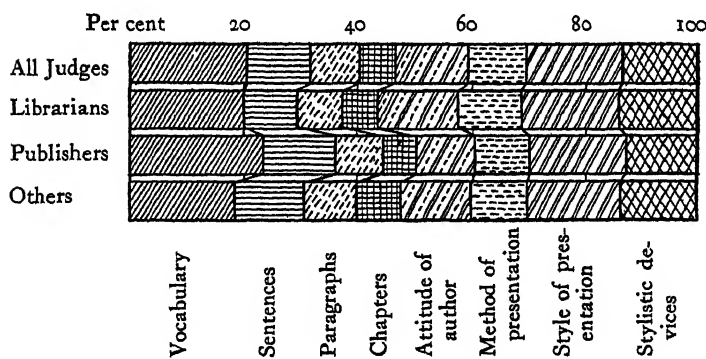


FIG. 3.—An evaluation of general aspects of style

of style is generally conceded more important than method of presentation. Since vocabulary and sentences are rated by most judges above other aspects pertaining to mode of expression, it appears reasonable to suppose that they are considered the basic elements of expression, which, if readable, insure readable paragraphs and chapters.

That the members of all groups agree fairly well in their evaluation of the various aspects of style is indicated by the standard deviations, which are generally smaller than those found for aspects of content. There is evidence in the range of values, however, to show that in every group one or more judges give zero values to certain aspects, to which others give values of 20 or 30 per cent. It is such discrepancies as these that point to the need of detailed study in order to determine for whom a particular style is readable.

#### FACTORS OF FORMAT IN A READABLE BOOK

Table VI lists the factors of format checked with greatest and least frequency by all groups of judges. Factors held of greatest

TABLE VI

FACTORS RELATED TO FORMAT RANKED OF GREATEST AND LEAST IMPORTANCE TO READABILITY BY EACH GROUP OF JUDGES

Factors Ranked in Highest One-Fourth of 90 Factors	Factors Ranked in Lowest One-Fourth of 90 Factors
<i>8b</i> Attractive binding <i>9j</i> Appropriate illustrations <i>4k</i> Well-spaced type <i>9l</i> Maps and diagrams <i>4c</i> Clear, legible type <i>7c</i> Attractive page <i>1b</i> Book of average size <i>1f</i> Light-weight book <i>3b</i> Dull-surfaced paper <i>4m</i> Black ink <i>9g</i> Captioned illustrations <i>4p</i> Attractive type <i>8a</i> Sturdy binding	<i>1c</i> Size of book larger than a textbook <i>4n</i> Dull ink <i>4a</i> Large type <i>4d</i> Small type

and least importance by separate groups are shown in Tables LXXII, LXXIII, and LXXIV, Appendix B. Obviously, the majority of judges believe that readers of limited ability will find a book readable if it is of average size (*1b*) and light in weight (*1f*). It is, as Robinson has said, "a good little book, easy to slip into one's pocket." Its binding is sturdy (*8a*) and

attractive (8*b*). Its captioned illustrations (9*g*), maps and diagrams (9*l*) are appropriate for the content (9*j*). It is printed on dull-surfaced paper (3*b*) in a type that is well-spaced (4*k*), clear, legible (4*o*), and attractive (4*p*).

But these factors are not particularized. If, then, we discover that they actually do make a book readable for readers of limited ability, we shall still need to determine what kind of binding is attractive, what size of type is most legible, what are the characteristics of an attractive page, and how large is a comfortable book. On such issues as these we find a diversity of opinion. For example, an attractive page may depend in part on color of paper. But what is the best color of paper? The majority of librarians believe that non-white paper promotes readability; whereas publishers and others interested in adult education favor white paper. The latter opinion probably comes closer to the truth of the matter, inasmuch as there is some evidence to show that white, grayish, yellow, and red is the best order of color for legibility.<sup>12</sup>

Again, the three groups of judges agree that type in a readable book should be well-spaced (4*k*), attractive (4*p*), clear and legible (4*o*). How can these qualities be attained? Individual judges favor large type, small type, Granjon type, double-spaced type, 11-point type, 12-14-point type, and type with 4-point leading. Generally, however, they agree (Table VI) that neither large (4*a*) nor small (4*d*) type is of any special importance to readability, provided that the product obtained is attractive, clear, and legible. Disposal of the question in this fashion shows the apparent need of discovering what is the range of the optimum size of type which readers of limited ability find readable. At the present time scientific evidence bearing on the problem of best size of type is too conflicting and inconclusive to warrant even tentative conclusions.<sup>13</sup>

<sup>12</sup> H. Griffing and S. I. Franz, quoted by Madeline D. Vernon, *The Experimental Study of Reading* (Cambridge: University Press, 1931), p. 170.

<sup>13</sup> *Ibid.*, pp. 165-66.

THE RELATIVE IMPORTANCE OF GENERAL  
ASPECTS OF FORMAT

Table VII summarizes the evaluation of nine aspects of format. In general the data are in harmony with the facts already presented. Kind of type and printing (No. 4) is given the highest mean value for all groups. Factors belonging to this class are agreed upon more frequently than those of any other class, as shown in the first column of Tables LXXII to LXXIV. Furthermore, a larger number of them are checked

TABLE VII

SUMMARY OF JUDGMENT CONCERNING THE RELATIVE INFLUENCE ON  
READABILITY OF GENERAL ASPECTS OF FORMAT

GENERAL ASPECT	ALL PERSONS			LIBRARIANS			PUBLISHERS			OTHERS INTERESTED IN ADULT EDUCATION		
	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range
1. Size of book.....	12.57	7.55	50-5	13.32	6.10	30-5	8.66	4.14	20-5	14.31	9.89	50-5
2. Number of pages.....	7.08	5.49	25-0	7.35	6.20	25-0	4.50	4.31	10-0	8.05	4.82	18-0
3. Quality of paper.....	9.31	4.27	20-0	9.29	4.53	20-0	9.92	2.91	17-5	9.18	4.66	20-5
4. Kind of type and printing.....	23.21	10.35	60-5	23.16	11.93	60-9	26.04	10.53	40-15	21.73	7.30	40-5
5. Length of line.....	5.90	4.46	20-0	4.58	3.77	15-0	9.75	5.12	20-4	5.41	3.87	15-0
6. Margins.....	6.98	3.77	25-0	7.13	4.54	25-0	8.08	11.44	10-4	6.00	3.01	12-0
7. General appearance of page.....	13.07	8.60	45-0	14.94	8.84	40-0	12.25	6.79	30-4	11.73	8.80	45-0
8. Binding.....	7.90	4.56	20-0	8.13	5.48	20-0	7.75	4.26	15-5	7.59	3.31	15-0
9. Illustrations.....	13.97	7.82	45-0	12.10	6.78	30-0	13.04	4.82	20-10	16.00	7.40	25-5

by occasional judges, as shown in the second column of the same tables. It seems probable that the judges who have definite views about size of type are responsible for the wide diversity of opinion within the various groups that is indicated in Table VII. This diversity may be noted in the wide range of value and the comparatively large standard deviation of the mean for all groups. Since both of these measures are largest among librarians, it is clear that this group is not in close agreement as to what is the relative influence of type on readability.

Librarians and others interested in adult education rank length of line of least influence with notable consistency (Fig. 4). Publishers, however, judge number of pages of least significance, perhaps because they lack direct contact with readers of limited

ability and are therefore not aware that length of line influences book selection.

An examination of range of values assigned by various groups shows that all publishers are more inclined to give some credit to each general aspect than are members of any other group. Although some publishers evaluate particular aspects as low as 4 per cent, certain judges in other groups consider them of zero influence. Librarians especially tend to dismiss them as being of no consequence, with the result that one or more of these

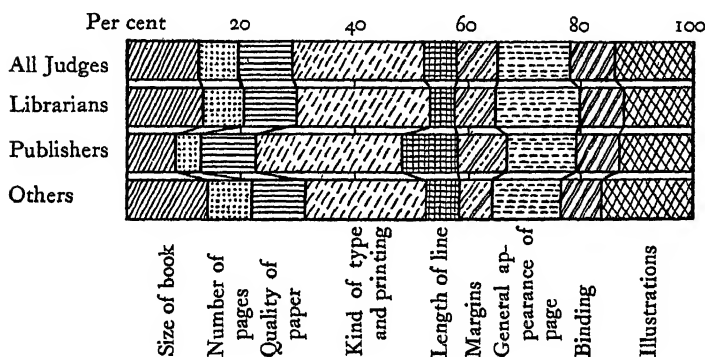


FIG. 4.—An evaluation of general aspects of format

judges give zero value to all but two of the nine general aspects. We may expect publishers to remain more open-minded toward all aspects of format than other groups, since it is the category most directly under their control.

#### WHAT FACTORS OF ORGANIZATION INFLUENCE READABILITY?

Data presented in Table VIII show the common opinion of librarians, publishers, and others concerning the factors of organization that are of greatest and least importance to readability. These data are derived from Tables LXXV, LXXVI, and LXXVII, in Appendix B.

Only thirty-seven factors were suggested originally as probable contributors to readability. Hence the number ranked in the highest and lowest one-fourth by all groups of judges is necessarily small.

A readable book, according to the judges, has three foremost characteristics of organization: a striking title (1*a*), a table of contents (4*a*), and descriptive chapter headings (2*a*). In addition, it has two other characteristics of almost equal importance: paragraph divisions "not like a textbook" (3*f*), and an index "with a catchy title" (4*b*). Obviously, what the judges mean is this: "Use a little strategy. Put a book together so it looks readable. Advertise to the prospective reader what he will find in the book. And you challenge him to read it." Although other

TABLE VIII

FACTORS RELATED TO GENERAL FEATURES OF ORGANIZATION  
RANKED OF GREATEST AND LEAST IMPORTANCE TO  
READABILITY BY EACH GROUP OF JUDGES

Factors Ranked in Highest One-Fourth of 37 Factors	Factors Ranked in Lowest One-Fourth of 37 Factors
2 <i>a</i> Descriptive chapter headings 4 <i>a</i> Table of contents 1 <i>a</i> Striking title of book 3 <i>f</i> Paragraph divisions not like a textbook 4 <i>b</i> Index with catchy title	4 <i>i</i> Index

judges than librarians and publishers favor interesting subheads in bold-faced type, these two groups consider the factor of little importance. Apparently, they fear that the practice may tend to produce a textbookish product which does not look readable to the adult of limited reading ability.

What to do with references in a readable book seems to be a question open to disagreement (Tables LXXV-LXXVII). Opinion is more diversified with respect to this aspect of organization than to any other. The weight of opinion among librarians is toward references following the text. Publishers are about equally divided on placing references in the text proper or in the appendix, while the third group of judges comes out quite uniformly for placing them in the text proper. One judge qualified his first recommendation by a second—that there be "few

references." It is clear that evidence is needed to prove whether the placement of references influences readability for particular kinds of readers.

#### THE RELATIVE IMPORTANCE OF GENERAL ASPECTS OF ORGANIZATION

Table IX and Figure 5 show that all judges hold reference guides as an important aspect of organization. Librarians and publishers assign to this item a slightly higher mean value than to

TABLE IX

SUMMARY OF JUDGMENT CONCERNING THE RELATIVE INFLUENCE ON READABILITY  
OF GENERAL ASPECTS OF ORGANIZATION

GENERAL ASPECT	ALL PERSONS			LIBRARIANS			PUBLISHERS			OTHERS INTERESTED IN ADULT EDUCATION		
	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range	M.	$\sigma$	Range
1. Title of book.....	28.25	16.31	80-0	27.50	13.77	50-0	25.33	13.60	50-0	27.68	17.74	75-5
2. Chapter divisions.....	20.82	8.85	50-7	18.37	7.03	30-10	21.58	7.81	45-14	24.45	10.36	50-8
3. Paragraph divisions.....	21.80	11.31	50-0	20.47	12.08	50-0	24.08	9.63	40-10	23.00	11.03	50-10
4. Reference guides.....	29.12	16.24	75-0	33.67	18.47	75-10	29.00	10.53	42-5	24.86	14.10	65-5

other aspects. Other persons interested in adult education rank the title of a book of considerably greater importance than reference guides. Lack of agreement within separate groups is indicated by the wide range of value and the large standard deviations of the different means. Disagreement is also marked in the case of titles of books which librarians and publishers evaluate anywhere from zero to 50 per cent, and other persons, from 5 to 75 per cent. Probably, it is more significant that the majority of all judges agree upon a striking title as a mark of a readable book than that individual evaluation of this aspect varies from zero to 75 per cent.

#### OBTAINING REACTIONS FROM LIBRARY READERS

The next step in this inquiry has aimed to obtain reactions from readers in libraries concerning what makes a particular book readable. About forty readers' advisers in as many large



libraries of the country co-operated. Each was requested to obtain through personal conferences with adult patrons, preferably those of average or low reading achievement, as complete a statement as possible of the factors they believe make for readability of a book recently read. Two other types of information were desired: personal data concerning the reader, such as age, sex, occupation, last grade in school, kind of material usually read, and time devoted to reading per day; and the adviser's own statement of the book's readable qualities.

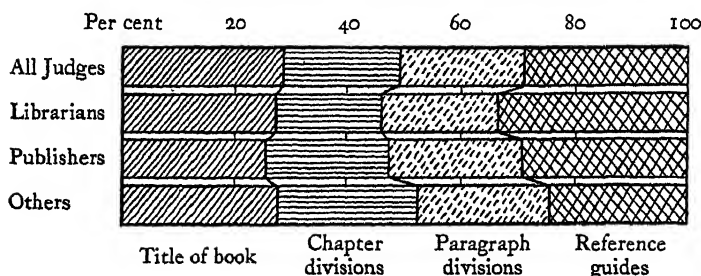


FIG. 5.—An evaluation of general aspects of organization

For obtaining the reader's reaction to a book, the following questions were suggested:

1. Why did you read this book?
2. How well did you like it?
3. Why did you like (or not like) the book?
4. Was the book readable; that is, was it easy and pleasant to read, and did it bring interest and satisfaction?
5. What was there about the book which made it readable for you; that is, that made it easy and pleasant to read?

Statements received from the readers in answer to these questions were interpreted so far as possible in terms of the classified list used previously. Comparisons were then drawn between the reader's reaction to a particular book and that of the readers' adviser to the same book. This was done for the purpose of determining similarities and differences of opinion relative to factors of readability found. Illustrations of these similarities and differences will be given later.

## THE KIND OF READERS REPORTING

Reports from 170 readers' advisers represented the opinion of as many readers, 74 men and 96 women. Their ages ranged from fifteen years for one reader to eighty years for another. The mean age was 31.4 years. Thirty-four of the readers were unemployed, the remainder reporting a total of 56 different occupations. Included in this number were 28 home-makers, 12 stenographers, 8 students, 5 housemaids, and 5 secretaries. The rest were scattered singly or in groups of two to four in other occupations. Educational background, as measured by the last grade attended in school, ranged from third grade to post-graduate in college. One person reported each extreme. Twenty-eight of the readers claimed some education beyond high school. The mean last year attended by the 156 readers who gave this information was 10.6, representing an educational background somewhat beyond what was most desired for the inquiry.

The type of reading usually done by the 170 readers was classified into 44 categories, several individuals reporting that they were accustomed to read a variety of content. It was evident from the classified list that the reading tastes and habits of these readers were widely diversified. Fifty-two persons reported they read fiction most commonly; 29 reported popular non-fiction; 26, biography; 24, all kinds of reading; and 18, travel. The following kinds of material were reported as the usual choice of one reader each: science, arts, engineering, short stories, useful arts, mechanics, memoirs, adult education, inspirational books, and radical books on religion and capitalism.

The amount of time devoted to reading per day was frequently indicated by such terms as "little," "constantly," "irregular," "over an hour," and "evenings." Twenty-seven readers claimed one hour of reading per day and a similar number, two hours. Eleven averaged between two and three hours daily, and 8, three hours. Various other amounts were reported up to eight hours, which was recorded by one reader. The wide diversity in this information may have been due in part to different reading habits, but probably much of it was due to diffi-

culty in estimating the amount of time usually devoted to reading.

It is obvious from these data that we have obtained no synthetic portrait of the reader of limited reading ability. We have made no attempt, therefore, to present the opinions of this type of reader. Neither have we generalized as to the factors which different sorts of readers believe contribute to readability for different sorts of reading, as we had hoped. The number of readers proved too small to give a representative sampling of any one class. What we have attempted is, first, to determine the factors most frequently mentioned by all readers, regardless of age, sex, educational background, and reading habits; and, second, to compare them with the factors listed by the readers' advisers for the same books. The extent to which the readers and their advisers attributed readability of the books reported to the same or different factors will be shown in succeeding paragraphs.

#### AN ANALYSIS OF READERS' REACTIONS

The number of different books reported was 153. Seventeen were read by more than one reader, *The Good Earth* having been read by six persons. Some errors in interpretation doubtless occurred for the reason that the particular factor to which reference was made was occasionally vague. For example, a colored man, a freight-handler, who had left school in the fourth grade, declared that *Robinson Crusoe* was the best book he had ever read, because "the words were so you could read right along." Whether he meant that the words are short, or easy, or familiar, or non-technical, or informal, or colloquial could only be implied from a knowledge of the book. Again, a housekeeper who had attended school only to the sixth grade liked *The Log Cabin Lady* so well that she read the book three times. She considered it readable because "it follows along after you get started without a break." This statement might be interpreted to mean that the paragraphs are "progressively continuous," or that the style of presentation is "rapid" or "easy and fluent," or that the appeal is "within the reader's scale." When the meaning of a

statement could not be determined with some definiteness from a reader's total reaction to the book it was omitted from classification.

Other persons gave clear reasons for considering a particular book readable. A college graduate, a field director of boy scouts, who is especially interested in non-fiction, found *The Epic of America* very readable. He attributed its readability to the following factors: large easy type, good paragraphing, comfortable size, clear-cut presentation, vivid introduction, prologue, and fair interpretation of people and events. Such factors could be readily classified.

When the opinions of all 170 readers had been interpreted and tabulated, it was found that factors pertaining to style had been mentioned 193 times. Factors of content ranked second with 151 mentions; format, third, with 78; and factors of organization, last, with a total of 8 mentions. A distribution of the 114 different factors mentioned by the readers showed that of the 28 which were most frequently mentioned as contributing to the readability of a particular book, 13 are aspects of style, 9 of content, and 6 of format.

Many of these factors which are listed in Table X were translated from such personal statements as: "I was interested in finding out how to cure sleeplessness" (IV, 2*f*), "I always want to read about India" (IV, 1*a*), "I learned how to speak correctly" (IV, 2*p*), and "I felt as though the author meant what he wrote" (III, 5*g*). Statements of this sort were noticeably predominant among readers of less than average schooling and of somewhat mediocre reading tastes. They probably do not mean that factors of format and organization exercise no influence on readability, but, rather, that the influence, though probably less than that of style and content, is so subtle that the reader is conscious only of interesting content written in a manner he can understand. There is need for investigation to determine the extent to which attractive format creates interest in books and adds to readability for different classes of readers.

Another frequent type of comment, and one which defied

precise classification, was that a particular book was considered "easy," "easy to read," "easy to understand," or "not very hard." In some cases, the readers' adviser clarified such state-

TABLE X

FACTORS MENTIONED WITH GREATEST FREQUENCY BY READERS AND READERS' ADVISERS IN COMMENTS REGARDING THE READABILITY OF THE SAME BOOKS

Factors Ranked in Highest One-Fourth of 114 Factors by Readers	Factors Ranked in Highest One-Fourth of 104 Factors by Readers' Advisers
IV, 2j Interesting subject matter	*I, 4g Good print
IV, 1a Theme—what people want to read about	*I, 4o Clear, legible type
*IV, 1o Real or ideal life experience	*I, 1g Book of comfortable size
III, 7a Simple style	I, 1f Light-weight book
IV, 2p Informational material	*I, 2a Brief book
*III, 7k Easy, fluent style	*I, 4a Large type
IV, 2c Familiar content	I, 1a Small book
*I, 2a Brief book	II, 2a Descriptive chapter headings
*I, 4o Clear, legible type	III, 1g Simple words
*I, 4a Large type	*III, 7k Easy, fluent style
*III, 7b Vivid, colorful style	IV, 1n Theme—human interest
*I, 4g Good print	*IV, 1o Real or ideal life experience
*III, 7g Entertaining style	I, 8b Attractive binding
III, 1c Easy vocabulary	I, 9k Attractive illustrations
III, 1k Non-technical vocabulary	*III, 7g Entertaining style
III, 5g Sincere attitude of author	III, 7p Informal style
IV, 1g Theme—people and personalities	I, 1b Book of average size
*IV, 1l Theme—romance and action	I, 6a Wide, liberal margins
IV, 2l Helpful subject matter	*III, 7b Vivid, colorful style
IV, 2r Satisfying subject matter	III, 7j Simple style
III, 1j Common, familiar vocabulary	*IV, 1l Romance and action
*III, 7d Lucid, clear style	I, 7c Attractive page
III, 7s Natural style	*I, 9j Appropriate illustrations
III, 8b Omission of nonessentials	*III, 7d Lucid, clear style
*I, 1g Book of comfortable size	III, 2e Simple sentences
*I, 9j Appropriate illustrations	III, 8e Conversation
III, 6b Descriptive style	
III, 7a Direct style	

\* Factor mentioned by both readers and readers' advisers.

ments by attributing the readability of the book to "short sentences," "lack of technical words," "use of first person singular," or "simple language"—qualities that presumably relate to ease of reading and ease of understanding. In other cases,

the readers' adviser ascribed none of the readability of the book to elements that may promote ease.

From the records of readers' advisers it was found that factors of format were mentioned 223 times; those of style, 162 times; of content, 65 times; and of organization, 46 times. Different factors numbered 104, their frequency of mention ranging between 37 and 1. For the sake of convenience in comparison, the most frequently mentioned factors of readability obtained from the advisers' reports are also listed in Table X. It may be noted that of these 26 factors, 13 pertain to format, 9 to style, 3 to content, and 1 to organization, in the same order as the total number of mentions. Factors mentioned both by readers and readers' advisers are indicated in the table by asterisks.

That readers' advisers should most often attribute the readability or non-readability of 153 books to factors of format is perplexing, when one recalls that in the earlier part of the inquiry librarians and advisers rank this category third in value among the four major categories. Furthermore, data presented in Table VII show that the ranking has been done with considerable agreement. Several assumptions may be made. One is that factors of format are actually most influential for readability or non-readability of the particular books read, despite the fact that readers themselves tend to minimize the effect of format.

A more plausible assumption is that in the earlier inquiry readers' advisers were judging readability in general. Here they are judging the readability of a specific book, which may or may not be the same thing. It may be easier to talk about interesting content, pleasing style, and other more or less subjective qualities than it is to label them definitely. On the other hand, good print, large type, light weight, brevity, and comfortable size are relatively constant and objective for any one judge, and consequently more freely mentioned in evaluating a particular book.

The third assumption, and one on which some evidence is available, is that readers' advisers may not have read some of the books. Hence, they felt unqualified to comment on factors

of content and style, confining their evaluation, instead, to factors of format, which can be observed with little trouble, yet with considerable accuracy. Evidence to support this assumption was found in the reports of six books which readers' advisers said they knew only from handling, not from reading. Six other books were given no evaluation, presumably because they were quite unfamiliar to the readers' advisers. It seems probable that all three of these assumptions may explain in part the difference in emphasis noted between the general evaluation of readability made by the readers' advisers and their specific evaluation of particular books.

The twelve factors most frequently mentioned by both readers and readers' advisers may be noted in Table X. In ascribing readability to format, both groups most frequently state that the book is of comfortable size (I, 1*g*), is brief (I, 2*a*), with large (I, 4*a*) clear, legible (I, 4*o*) type, good print (I, 4*q*), and appropriate illustrations (I, 9*j*). The style of a readable book is generally vivid and colorful (III, 7*b*), lucid and clear (III, 7*d*), easy and fluent (III, 7*k*), and entertaining (III, 7*g*); and its content is based on real or ideal life-experience (IV, 1*o*), or on romance and action (IV, 1*l*).

In order to show concretely the similarities and differences found between reactions of the reader and of the readers' adviser to the same book, typical statements are cited in the outline on pages 53 and 54. They show the marked tendency of the readers' adviser to point out desirable factors of format and of the reader to emphasize style and content. All statements are quoted exactly from the reports of the two groups.

TYPICAL REACTIONS OF READERS AND READERS' ADVISERS  
TO THE SAME BOOK

BOOK	READER	REACTION OF READER	REACTION OF READERS' ADVISER
Jackson, J. A., and Salisbury, Helen, <i>Outwitting Our Nerves</i>	Female—27 yrs. Mother. Eighth- grade education. Reads novels usually.	It had a whole chapter on being unable to sleep, and other things I needed. I could find anything I wanted in the book after I read it. So many times I wanted to show my husband something and I could turn to it in a second because everything im- portant in it was brought out.	Medium-sized, light, good print. Well or- ganized. Each chapter has several headings of different kinds. Para- graphs are emphasized by black ink sugges- tions. Most of the chapters are summa- rized. There is a glos- sary, a bibliography, and an index. The con- tent satisfies.
Swift, <i>Psychology and the Day's Work</i>	Male—46 yrs. Unemployed. Eighth grade. Reads psychol- ogy, religion, etc.	Yes, the book was readable. I don't know why.	Non-technical, brief presentation of the re- lation of psychology to everyday life. Good print. Handy size. Journalistic style.
Fernald, <i>Expres- sive English</i>	Male—35 yrs. Carpenter. Sixth grade. Reads newspa- pers and maga- zines.	It was easy to under- stand. Well expressed. Good print. Light to hold (to read on the cars).	Information given in an interesting manner. Many apt examples. Convenient size. Clear print.
Hugo, <i>Les Misera- bles</i> . Adapted by Ettie Lee	Male—20 yrs. Unemployed. Fourth grade. Reads newspa- pers.	It was exciting and true. It was not too long and the print was good.	Short sentences. Sim- ple language. A great deal of action.
Gide, <i>First Prin- ciples of Political Economy</i>	Male—35 yrs. Unemployed. Sixth grade. Reads some newspapers and the <i>Pathfinder</i> .	I couldn't understand it. Too many big words. I couldn't "fig- ger out" what he was talking about. He used so many big words that I never seen. I tried to use the kid's dictionary but by the time I'd hunted up the words I'd clean forgot what he was talking about.	Admirable in format, etc. Vocabulary too difficult for the level of the subject matter. Here is a case that might pay to translate into "Brief English." Subject matter is too elementary for those who can read it readily, on account of vocabu- lary.



## WHAT MAKES A BOOK READABLE

TYPICAL REACTIONS OF READERS AND READERS' ADVISERS  
TO THE SAME BOOK—*Continued*

BOOK	READER	REACTION OF READER	REACTION OF READERS' ADVISER
Humphrey, <i>Story of Man's Mind</i>	Female—40 yrs. Social worker. H.S. graduate. Reads biography and social subjects.	Simply written so that I could understand it. Made me want to go further in the subject. Good format. Liked the diagrams. Style was readable. It referred to things I already knew about, not over my head.	Form of book looks easy. It is simply written without technical vocabulary. Has simple illustrations and allusions to everyday things.
Defoe, <i>Robinson Crusoe</i>	Male. Colored —30 yrs. Freight-handler. Fourth grade. Reads everything that will "learn him something."	Crusoe was like me, he made the best of everything. The words were so you could read right along.	Written in first person singular. Short chapters. Proceeds without a break. Content—of primitive living, struggle for conquest, rich use of ingenuity. Lack of technical words. Short sentences. Good-sized print. Clear illustrations. Paragraph divisions. Subheads.
Halliburton, <i>Royal Road to Romance</i>	Female—26 yrs. Knitter in a hosiery mill. Eighth grade. Reads travel books.	Made things seem real. Easy to read. Simply written. Easy to understand.	Author's enthusiastic manner. Attractive size and general organization.

## SUMMARY OF INQUIRY RELATIVE TO READABILITY

The evident similarity of opinion among the judges who evaluated the classified factors proves that publishers, librarians, and others are more united in their thinking about the factors which may influence readability than perhaps they themselves realize. It has been shown that groups interested in the problem can analyze readability as a general quality, and that they can do so with more than a fair degree of consistency. Obviously, mere agreement of opinion does not establish that opinion as truth. However, since many opinions compiled in this inquiry are based upon careful observations of reading in-

terests, habits, and demands of adults, it is highly probable that those agreed to by a majority of judges are symptomatic of the truth as it pertains to factors which make a book readable for readers of limited ability.

The lack of agreement among individual judges is quite as notable as the presence of agreement among groups of judges. Wide diversity of opinion regarding the relative influence of some general aspects is shown by a range in value from 10 to 80 per cent. For specific factors, the variability in judgment ranges in several cases from double checks, indicative of special significance, to no check, implying zero significance. We can no more conclude that one is right and the other wrong than we can conclude that general agreement among the judges establishes a factor as important or unimportant for readability. In both cases we need supporting evidence to determine how a particular factor contributes generally to the readability of a certain kind of material for a certain class of reader.

Upon the question of what factors actually influence readability and of what is their relative importance in determining the readability of a book, this inquiry can do little more than suggest an answer. Its findings rather offer a challenge to attempt to discover whether factors generally believed to influence readability really do so. For example, does provision for certain aspects of format, such as average size and light weight of a book; black ink; dull-surfaced paper; clear, legible, attractive type; captioned illustrations; and maps and diagrams contribute to readability, as the judges believe? If so, what size of type is clear, legible, and attractive? Is size of less significance than leading or interlineage? Do captioned illustrations promote readability? If so, what kind is more effective, the cartoon-type as suggested by eleven judges or photographs as suggested by one judge?

Innumerable other questions arise from an examination of the data obtained from the inquiry—questions that can be answered only by experimentation with the reader for whom readable materials are apparently needed. Subjective testi-

mony of readers themselves regarding what makes a particular book readable or non-readable is not enough. Evidence of an objective sort should be sought in order to reveal factors of which the reader may be quite unconscious.

If the investigation is to produce practical outcomes, it must be resolved into major aspects. These must then be analyzed into a series of related problems for detailed study. Research directed toward the discovery of facts pertaining to format and organization should aim to give a list of desirable practices that will guarantee books that look readable, especially for adults of limited education. Conrad's investigation of reading material for native adult illiterates and near-illiterates is a promising beginning. The study of reading content as attacked by Waples and Tyler furnishes data by means of which librarians, writers, and publishers may determine what different groups of adults want to read about. From these data, too, publishers and writers may be guided in their further efforts to prepare informational material that different classes of readers will read if the opportunity allows.

The fourth aspect of readability, and one which both judges and readers agree is of major importance, is concerned with the style of expression and presentation of material by means of which content is made "easy and pleasant" for different classes to read. It is with this aspect that we are concerned in the remaining chapters of our report. We have anticipated that a thoroughgoing investigation of problems related to ease or difficulty should ultimately supply needed standards for making vocabulary, sentences, and paragraphs easy to read. It should also discover the methods of presentation that tend to insure pleasant and satisfying reading. When each aspect of readability has been defined precisely for different readers, it seems reasonable to believe that all the facts may be synthesized and utilized in the production of more books which *look* readable from the point of view of format and organization, and which *are* readable if their content and style make them easy and pleasant to read.

## CHAPTER III

### HOW WELL DO ADULTS READ?

ACCORDING to the plan outlined in chapter i, only a single aspect of readability has been studied intensively for this initial report of what makes a book readable. That aspect is ease or difficulty of materials comprising the general reading of adults. Our primary concern is to discover the elements inherent in such materials which influence ease or difficulty.

It must be recognized at the outset, however, that difficulty is a relative quality and that it can be defined only in terms of a reader's comprehension. Material is easy for one reader because he can understand it, whereas it is difficult for another reader because he cannot understand it. This phenomenon raises two practical questions: For what class is it most important to identify elements of difficulty? And, How well are readers of that class able to read the kind of materials in which elements of difficulty need to be defined? Inasmuch as it is the reader of limited ability who finds most of the material now written for adults too difficult, it is for this class of reader that we have aimed to identify elements which influence difficulty.

The purpose of this chapter is, first, to show how well representative groups of adults are able to read, and, second, to define more precisely who are readers of limited ability. In accomplishing these purposes, it was recognized that certain objective measuring instruments are essential to an accurate determination of reading ability. A representative sampling of the adult population is also necessary in order that evidence concerning how well adults read may be as valid as possible. A description of the testing instruments used, together with a characterization of the groups tested, is presented in the sections that follow.

Since testing conditions vary widely in different situations, it was impossible to measure the ability of all groups by all the testing devices used in the study. For example, some groups were tested for ability to comprehend the content of general magazines, books, and newspapers commonly read by adults. Others were tested for speed and accuracy of oral reading. All groups were tested for ability in silent reading as expressed in terms of grade norms. In view of these variations, the evidence concerning reading ability for all groups could not be considered collectively. Instead, it has been compiled and presented in a manner that provides the most satisfactory basis for interpreting facts obtained from single tests. How well different classes of adults read general material is shown first. Their ability in silent reading is revealed next in terms of grade norms. Their speed and accuracy of oral reading is presented last.

#### HOW TO MEASURE COMPREHENSION OF GENERAL READING MATERIAL

An examination of existing tests in reading showed that none was available for measuring comprehension of general reading materials such as are found in books, magazines, and newspapers. For this reason the preliminary task of constructing such a test was undertaken. The type constructed was determined in the light of the theory generally accepted regarding the nature of comprehension. That comprehension is not a single unitary process is commonly conceded. It is, rather, a blending of many processes whose totality represents understanding. But comprehension has not been resolved satisfactorily into its component processes. Consequently, first one and then another has been isolated and taken as a measure of comprehension.

In selecting aspects of comprehension to use in constructing reading tests, we have made two assumptions. The first is that ability to grasp the essential meaning of a selection in the form of a general impression is the outcome most frequently demanded of adults in reading general material. The second is that a large amount of reading is done in order to gain specific infor-

mation contained in the selection. Furthermore, since ability to grasp the essential meaning seems to depend in a degree upon ability to react satisfactorily to specific elements contained in the selection, it is assumed that any technique devised to measure the first outcome will indirectly measure the second.

#### THE ADULT READING TEST

The construction of the adult reading test used in measuring comprehension of general materials is described in detail in Appendix C. The test consists of two forms printed in separate booklets. Form 1 contains a series of twenty-four un mutilated paragraphs of fiction selected from magazines, books, and newspapers. Form 2 contains a similar number of paragraphs of non-fiction selected from the same general source. An attempt was made in all cases to choose complete units of thought, the sense of which could be given in single summary statements. In order to increase the reliability of the measure of comprehension, two reactions were required. The first was the identification of the best summary in a series of five statements relating to the paragraph. The second was the recognition of a detail not found in the paragraph. Reactions were indicated in the manner prescribed by the following passage, quoted from the set of directions accompanying the tests:

You are to read each paragraph carefully. Then read the five sentences below the paragraph. Put a CHECK MARK (✓) before the sentence that tells best what the paragraph said. One of the five sentences tells something that is wrong or that is not in the paragraph. Mark that sentence with a ZERO (0). Do not mark the other three sentences.

The nature of the test is apparent from the following sample paragraph taken from the non-fiction test, designated as Form 2.

#### SAMPLE PARAGRAPH

For nine years I have watched, during the spring and summer months, a nighthawk that lives in the daytime on a big limb near the end of my garden. He can usually be found at the same spot from April to September. It may be that a member of a second or third generation now lives there; but it is truly a family tree. I often wonder why a bird becomes attached to one place,

unless it is because it is contented there. Explain it as you will, contentment results from peace of heart, and the home-loving heart is usually at peace.

#### PARAGRAPH SUMMARY

1. ——— Ever since the nighthawk built his nest in my garden he has lived there all the year round.
2. ——— The tree where the nighthawk lives is truly a family tree.
3. ——— The nighthawk can usually be found on the same limb during spring and summer.
4. ——— The nighthawk must be contented in my garden for he has lived there from April to September for nine years.
5. ——— The same nighthawk or perhaps a member of his family has lived in my garden during spring and summer for nine years.

The highest possible score on the fiction test, Form 1, is 92.2; and on the non-fiction, Form 2, 91.4. Test scores attained on the two forms by an individual or by a group are therefore comparable.<sup>\*</sup>

From the records secured by the use of these test-forms, significant facts were obtained concerning the relative ease or difficulty of fiction and non-fiction for general adult readers. Some evidence was secured also with respect to the type of material that adults read and interpret most readily.

#### SECURING GROUPS FOR TESTING

In presuming to answer the question of how well adults read, we had no alternative but to test a limited number of individuals and then to generalize on the results, applying them to the larger population of adults in general. Although it is theoretically desirable to select a sampling in such a way that the cases will represent fairly all portions of the population, it is practically impossible to do so.

The obstacles to be met in a program designed to measure adult abilities are many. In the first place, suitable testing opportunities are not readily available. At the time this study was carried on, the most favorable conditions were found in evening

<sup>\*</sup> The method of scoring the test, together with an evaluation of the test for reliability and validity, is given in Appendix C.

schools where students possessed a variety of abilities and stages of educational progress. Only occasional groups of adults attended day school before the organization of classes for emergency relief. Under ordinary circumstances, such groups are smaller in number and less regular in attendance than are those in evening schools. Allowance must be made, therefore, for considerable loss in time and materials if the testing program extends beyond one day. For example, a day-school group in Chicago was tested on two different days, with the result that although more than 40 adults took Form 1 of the Adult Reading Test and a similar number took Form 2 three days later, only 12 persons were common to both groups and consequently tested by both forms.

Other organized groups may be found in evening classes conducted by religious organizations or in classes provided for inmates of penal institutions. In the latter case, especially, students tend to be notably retarded and to possess obvious reading deficiencies. This is due largely to the fact that for the most part prison schools have attempted to do little more than to correct glaring educational deficiencies.

Groups classified at the secondary-school and college levels are usually available, and in the present study they proved of great value. The inclusion of students at the former level seems warranted, inasmuch as a large percentage of our population who enter high school do not continue their education farther. It seems reasonable to assume, therefore, that the reading achievement of the present generation of high-school pupils may indicate roughly how well some adults will read a decade or two hence. Unless they engage in adult educational activities in later years, it is probable that their present reading achievement is higher than it will be in the future.

One may question the inclusion of college groups in a testing program which is designed to discover readers of limited ability. During the past several years, however, findings have been obtained which show conclusively that college students not only differ widely in reading achievement but that many of them ex-



hibit surprisingly immature and deficient reading habits. It seems pretty clear that too much cannot be taken for granted concerning the ability of college students to read either their required course assignments or general adult books and periodicals. By restricting the college groups tested to those whose reading opportunities had been relatively meager, it seemed probable that some would manifest limited ability.

Since parent-teacher organizations are usually of a heterogeneous character, they furnish desirable subjects for testing a range of abilities, provided that they can be convinced the project is worth while, or if a trade in benefits can somehow be arranged. In the present study both conditions were met satisfactorily.

A second obstacle to testing adults lies in the hesitance and apprehension with which they approach a test of their abilities. This reaction is especially characteristic of adults whose education has been neglected or has been obtained in a language other than the one used in the test. It is obviously essential that harmonious relations be established between the administrator and test subjects if results are to be reliable. Various methods were used to secure confidence and consistent effort. For example, members of parent-teacher groups were fearful of exposing reading deficiencies. They were allowed to draw numbers by which to designate their tests. Retarded adults were constantly encouraged and were frequently reassured that inability to answer a test item or to finish a test was attended by no serious consequence. This was done to promote confidence and to prevent guessing, which would tend to invalidate the findings. A knowledge of the real purpose of the tests probably obviated the desire to finish at any cost and promoted honest effort.

#### WHAT GROUPS WERE TESTED?

Table XI presents the name, geographical location, approximate grade-placement or last grade attended in school, and size of the various groups tested by the adult test. They are arranged into six somewhat homogeneous classes with respect to

educational advancement. The first two represented adults who were continuing their education at the elementary level. The South Carolina group included workers in textile mills whose early schooling had been neglected. The next three groups, made up of working men and women of limited education, rep-

TABLE XI

NAME, GRADE-PLACEMENT, GEOGRAPHICAL LOCATION, AND SIZE OF GROUPS TESTED

Name	Grade-Placement	Geographical Location	Number of Cases
Elementary classes			
Glenn Street School.....	6	Anderson, S.C.	13
Evening-school classes			
Englewood.....	7, 8	Chicago, Ill.	30
J. Sterling Morton.....	7, 8	Cicero, Ill.	25
Dante.....	8	Chicago, Ill.	12
Junior high schools			
Berea Foundation.....	7, 8, 9	Berea, Ky.	90
A & M Model School.....	7, 8, 9	Tallahassee, Fla.	48
High schools			
Berea Academy.....	9, 10, 11, 12	Berea, Ky.	97
Berry High School Freshmen.....	9	Rome, Ga.	44
Rabun Gap-Nacoochee.....	10, 11	Rabun Gap, Ga.	40
A & M Model School.....	10, 11, 12	Tallahassee, Fla.	73
Berry High School, (Jr. and Sr.)...	11, 12	Rome, Ga.	14
Colleges			
Berea.....	Fr., S., Jr., Sr.	Berea, Ky.	98
Berry.....	Fr., Jr.	Rome, Ga.	89
Non-school group (parent-teacher associations)			
Hinsdale.....		Hinsdale, Ill.	38
Congress Park.....		Congress Park, Ill.	45
Total.....			756

resented the elementary classes found in the metropolitan evening school.

The two junior high-school groups and the five high-school groups listed in the table included young people and adults whose secondary education had been delayed. For example, Berea Foundation Junior High School aims to receive only "pupils from the mountain counties of Appalachian America who are

sixteen years of age and over, who do not live within reasonable reach of adequate public schools, and who have not completed the first nine grades." The junior and senior high-school groups of the Model School of the Agricultural and Mechanical Arts College, Tallahassee, Florida, enrolls young people and underprivileged adults of the colored race, some of whom are preparing for college. Berea Academy accepts students from a variety of contributing schools. At the time this study was begun, the entrance requirements were three units in the ninth grade. Some exceptions were made, however. Martha Berry High School offers educational opportunities to young people in the mountain districts of northern Georgia. Rabun Gap-Nacoochee School calls itself "a school that deals with mountain conditions as an economic problem." Whole families from the mountain regions of Georgia, North Carolina, and South Carolina attend school there under a revolving farm plan, and pay for their cottages and tuition with their produce. Other students help the farmers two days a week during the school year and ten weeks during the summer to pay for tuition and board.

The students of Berea College and Martha Berry College are largely mountain people. Entrance requirements to these colleges are practically the same as those of the Southern Association of Colleges.

The parent-teacher groups tested represented the better-educated American adults not in school. Although the members of these organizations possessed a diversified educational background, most of them had attended high school. Many were high-school graduates, some of whom had received more or less college training.

Additional data regarding the personnel of the groups tested were recorded on the test blanks by the individuals themselves. The validity of the data may therefore be open to question. The main facts obtained are summarized as follows:

1. Of the 756 subjects whose reading ability was measured by the adult reading tests, 416 were women and 340 were men.'
2. The age of the subjects ranged from 15 years to more than

50 years, as shown in Table XII. The mean age was 22.7. The size of the standard deviation, 7.5, indicates that for approximately the middle two-thirds of the subjects the age ranged between 30.2 years ( $22.7+7.5$ ) and 15.2 years ( $22.7-7.5$ ).

3. Educational training of the group, as measured by the last grade attended in day school, ranged from third grade, reported by one person, to above twelfth grade, reported by 246 persons

TABLE XII  
NEAREST AGE IN YEARS OF 756 ADULT SUBJECTS

Nearest Age in Years	Number	Per Cent
15.....	124	16.40
20.....	391	51.72
25.....	115	15.21
30.....	38	5.03
35.....	28	3.70
40.....	40	5.29
45.....	15	1.98
50.....	4	0.53
50+.....	1	0.13
Total.....	756	100.00

$22.7 \pm .18 = \text{Mean}$   
 $7.5 \pm .13 = \text{S.D.}$

(Table XIII). The mean was calculated at grade 11.01 by interpreting "beyond 12" as 14. If the data regarding previous schooling can be taken as reliable, it is evident that approximately the middle two-thirds of the adults tested on the adult test ended their day schooling between grades 8.32 and 13.70.

4. Of the 756 subjects who gave information concerning attendance at evening school, 660 reported from no attendance to three months, whereas three claimed a period between five and six years. The mean attendance was 3.1 months.

5. Amount of time devoted to reading per day was admitted by the subjects as representing no more than a crude estimate. Two persons reported that they never engaged in any reading. At the opposite extreme of the scale were 73 persons whose

average reading time exceeded three hours per day. The mean for the group was 1.56 hours.

6. The occupational classification used in Table XIV was adapted from the report of the Bureau of the Census, and hence tends to obscure the diversity of occupation actually obtained from the records. An additional classification, "Educational,"

TABLE XIII  
LAST GRADE ATTENDED IN DAY SCHOOL, AS REPORTED  
BY 756 ADULT SUBJECTS

Last Grade Attended in Day School	Number	Per Cent
3.....	1	0.13
4.....	6	0.79
5.....	13	1.72
6.....	15	1.98
7.....	42	5.56
8.....	87	11.51
9.....	90	11.90
10.....	62	8.20
11.....	46	6.08
12.....	144	19.05
Beyond 12*.....	246	32.54
Not reported.....	4	0.53
Total.....	756	100.00

$11.01 \pm .07 = \text{Mean}$

$2.69 \pm .05 = \text{S.D.}$

\* Beyond 12 was interpreted as 14 in computing the mean and standard deviation.

was added to include persons attending school. Although this group may seem disproportionately large, it is explained by the size of the under-privileged groups attending opportunity schools. Many adults were devoting a part of their time to a trade, yet preferred to class themselves students.

As indicated by these descriptions, the various groups tested included important elements in the adult reading public, if not a representative sampling of it. It is clear that we have sampled a wide range of educational levels from elementary to college.

But it is also clear that these groups tend to be selective rather than typical, that the individual members have educational interests of some sort or they would not be found in classrooms or in parent-teacher organizations.

No attempt was made to discover facts concerning illiterates. Their needs are urgent, but they are not reading nor are they

TABLE XIV  
OCCUPATIONS OF 756 ADULT SUBJECTS\*

Occupation	Number	Per Cent
Agriculture.....	4	0.53
Building and construction.....	2	0.26
Educational study.....	545	72.09
Manufacturing and mechanical industries.....	39	5.16
Transportation and communication.....	1	0.13
Trade.....	18	2.38
Public service.....	4	0.53
Professional service.....	29	3.84
Domestic and personal service.....	87	11.51
Clerical occupations.....	13	1.72
Unskilled labor.....	3	0.40
Not reported.....	11	1.45
Total.....	756	100.00

\* Classification was adapted from the report of the United States Bureau of Census. See: *The World Almanac and Book of Facts for 1933*. (New York: New York World Telegram, 1933), p. 456.

generally simulating reading interests and habits. Only those persons were tested who had learned to read and were apparently doing some reading. Although the findings obtained from such a testing program are not conclusive, they probably are suggestive of the level of reading ability possessed by the general public who reads adult magazines, books, and newspapers.

Groups of adults tested by other types of tests will be described in later sections.

#### HOW WELL DO ADULTS READ GENERAL READING MATERIALS?

Table XV presents the distribution of scores on Forms 1 and 2 of the Adult Reading Test made by 756 adults. It gives also the

mean score and the standard deviation of the mean for each test. For Form 1, the fiction test, the mean score was 53.86; for Form 2, the non-fiction test, it was 47.86. The difference of

TABLE XV

NUMBER AND PERCENTAGE OF 756 ADULTS MAKING VARIOUS SCORES ON THE TESTS OF FICTION AND NON-FICTION

SCORES	FICTION TEST		NON-FICTION TEST	
	No.	Per Cent	No.	Per Cent
89.95- 94.95.....	2	0.26	4	0.53
84.95- 89.95.....	29	3.84	21	2.78
79.95- 84.95.....	70	9.26	40	5.29
74.95- 79.95.....	86	11.38	61	8.07
69.95- 74.95.....	57	7.54	77	10.19
64.95- 69.95.....	55	7.28	59	7.80
59.95- 64.95.....	64	8.47	59	7.80
54.95- 59.95.....	52	6.88	66	8.73
49.95- 54.95.....	46	6.08	41	5.42
44.95- 49.95.....	41	5.42	56	7.41
39.95- 44.95.....	39	5.16	48	6.35
34.95- 39.95.....	41	5.42	52	6.88
29.95- 34.95.....	32	4.23	53	7.01
24.95- 29.95.....	31	4.10	43	5.69
19.95- 24.95.....	21	2.78	21	2.78
14.95- 19.95.....	27	3.57	13	1.72
9.95- 14.95.....	22	2.91	20	2.65
4.95- 9.95.....	19	2.51	12	1.59
- .05- 4.95.....	8	1.06	5	0.66
- 4.95- .05.....	8	1.06	2	0.26
- 9.95- 4.95.....	4	0.53	2	0.26
-14.95- 9.95.....	2	0.26	.....	.....
-19.95-14.95.....	.....	.....	.....	.....
-24.95-19.95.....	.....	.....	.....	.....
-29.95-24.95.....	.....	.....	1	0.13
Mean=53.86±.59 S.D.=24.01±.42			47.86±.52 21.24±.37	

6.00 between the means is statistically significant, since it is 7.6 times its probable error,  $\pm 7.9$ . The deduction to be drawn from this fact is that adult readers of the kind used in this study comprehend fiction better than non-fiction, when comprehension is

measured by the ability to get the general idea of the content. Controlling the construction of the tests prevented ascribing the difference in mean scores to a difference in difficulty of the tests themselves. Caution had been taken to select items for one test-form that would closely parallel those of the other when ranked by the occurrence of elements of expression believed to be indicators of difficulty. Furthermore, the highest possible scores on the two forms were approximately equal, being 92.2 for fiction and 91.4 for non-fiction. It seems reasonable to infer, therefore, that fiction is easier than non-fiction, though the two types of material contain a similar number of elements of difficulty.

That adults varied more widely in their understanding of fiction than non-fiction is evident from the standard deviations of the two tests. A difference of  $2.77 \pm .56$  between the units of variability, 24.01 and 21.24, is statistically significant.

As yet, it has not been possible to determine the level of achievement which persons should attain on the Adult Reading Test. If we assume that they should make a score of 50 or more—in other words, that they should comprehend at least half of what they read as measured by the tests used—then it is clear that somewhat more than half the group, 60 per cent, interpreted fiction satisfactorily. A slightly smaller number, 56 per cent of the group, interpreted non-fiction satisfactorily. If we assume that a score of 40 or more is satisfactory, then approximately 30 per cent showed a deficiency in comprehension of general materials.

Further comparison of the ability of adults to read the two types of material is afforded by Table XVI, which presents the mean scores on the fiction and non-fiction tests obtained by the twelve groups of adults. The mean scores on the fiction test varied from 19.95 for the A and M Junior High School group to 75.40 for the parent-teacher group. According to these data, the latter group was on the average about four times as efficient in reading fiction as the former. The mean scores of at least four groups fell below what is probably the minimal desirable score of 40.



An examination of actual scores made by individual subjects shows that 89 per cent of the A and M Junior High School group made scores below 40, whereas only 2.4 per cent of the parent-teacher group scored as low as 40. Scores of the same two groups defined the range on the non-fiction tests. Again the A and M Junior High School group attained the lowest mean score, 19.85; and the parent-teacher group the highest mean score, 67.45.

TABLE XVI

MEAN SCORES FOR EACH OF TWELVE GROUPS ON THE ADULT READING TESTS

Group	Mean Score on Fiction Test	Mean Score on Non-Fiction Test
Parent-teachers.....	75.40 ± .83	67.45 ± 1.12
Berea Academy.....	66.78 ± 1.05	58.90 ± .84
Berea College.....	66.27 ± .95	60.87 ± .88
Berry College.....	64.60 ± 1.30	57.85 ± 1.10
Rabun Gap.....	62.20 ± 1.90	53.95 ± 1.72
Berry High School* (Juniors and Seniors).....	58.10	50.00
Berry High School (Freshmen).....	46.77 ± 2.33	39.72 ± 2.30
A & M Senior High School.....	40.26 ± 1.43	30.47 ± 1.02
Evening schools.....	39.62 ± 1.90	39.24 ± 1.46
Berea Foundation.....	37.17 ± 1.57	33.05 ± 1.30
Glenn Street*.....	36.70	28.70
A & M Junior High School.....	19.95 ± 1.41	19.85 ± 1.26
Entire group.....	53.86 ± .59	47.86 ± .52

\* Probable errors not computed because of small number of cases.

For six of the twelve groups, the average score fell below 40. That all groups tested were able to read fiction more effectively than non-fiction is shown further by Table XVI. In every case, the mean score obtained on Form 1 was higher than on Form 2.

A more concrete picture of how well adults read the two types of material is presented in Figure 6. Comparison can be made on the basis of three values: median, third quartile, and first quartile. The median marks the point above and below which half the scores fall. The third quartile designates the point in the distribution above which one-fourth and below which three-fourths of the scores fall. The first quartile indicates the point

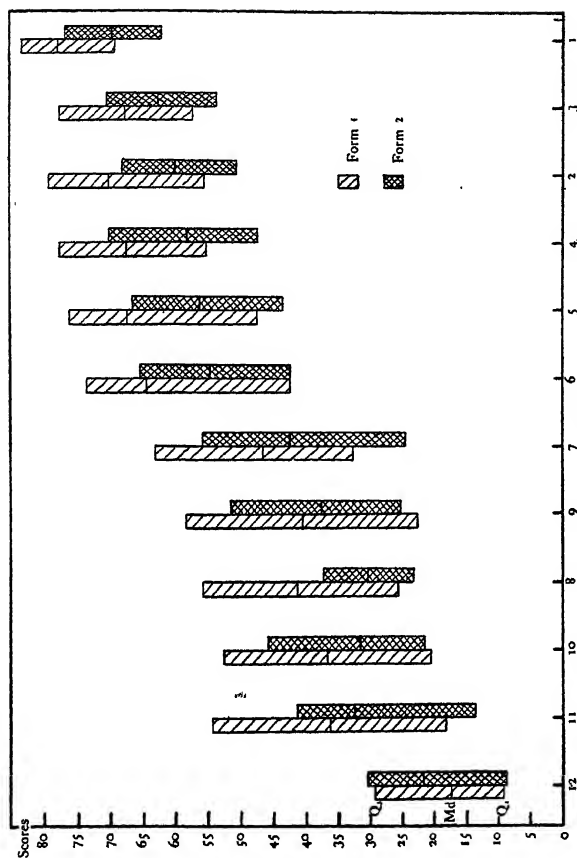


FIG. 6.—Median and first and third quartiles on Forms 1 and 2 of the Adult Reading Test for twelve groups of adults.

above which three-fourths and below which one-fourth of the scores fall. If the first and third quartile are widely separated, it is evident that there was a marked variability within a group. If, on the other hand, the quartiles are close together, it is plain that the scores within the group were less scattered.

Certain tendencies are apparent from Figure 6. With but one exception, all groups made a higher median score on fiction than non-fiction. In all but one case, the third quartile of the former was conspicuously higher than that of the latter. A comparison of the inter-quartile range for the two tests supports the evidence indicated by the standard deviations in Table XV, namely, that the ability of the adults tested varied more in reading fiction than in reading non-fiction. There is some evidence that groups classified at higher educational levels read both types of material with greater understanding than groups classified at lower levels, and that the spread of ability tends to be markedly less. That parent-teacher groups read with more understanding and less variability is to be expected. Since they are non-school groups, it is probable that they read general reading-matter more than do groups who attend school. Furthermore, inasmuch as they volunteered to take the tests, one may assume that they represented the most able readers. Circumstances prevented other groups from being as selective.

In Table XVII we have compared ability to read fiction and non-fiction in terms of a single value, the coefficient of correlation.<sup>2</sup> If a particular group reads fiction and non-fiction equally well, as measured by the tests used, the correlation will be high and the coefficient will approach +1. If a group tends to read one type of material better than the other, the correlation is low and the coefficient will approach zero.

The greatest agreement in reading fiction and non-fiction is shown in Table XVII by a coefficient of .779 for the evening-school groups. The least agreement is .481 for the A and M

<sup>2</sup> Statistical comparisons were made by Margaret D. Cleary, "Achievement in Reading of Selected Groups of Adults." Unpublished Master's thesis, Department of Education, University of Chicago, 1932, p. 84.

Junior High School group. Even here, however, the correlation is significant. Comparisons between the correlations obtained for different groups are not warranted, for the reason that the groups are not comparable in age, race, educational level, or socio-economic background. The general conclusion to be drawn from this table is that the relationship between ability to read fiction and non-fiction is positive and significant, and in most cases fairly high.

TABLE XVII  
COEFFICIENTS OF CORRELATION BETWEEN FORM 1 AND  
FORM 2 OF THE ADULT READING TEST

Groups	<i>r</i>	P.E.
Evening schools.....	.779 ± .032	
Berea Foundation.....	.778 ± .028	
Rabun Gap.....	.737 ± .048	
Berry High School (Juniors and Seniors)*.....	.700	
Berry High School (Freshmen).....	.691 ± .051	
Parent-teachers.....	.666 ± .041	
Berea College.....	.665 ± .038	
A & M Senior High School.....	.596 ± .051	
Glenn Street School*.....	.567	
Berry College.....	.539 ± .050	
Berea Academy.....	.519 ± .050	
A & M Junior High School.....	.481 ± .075	

\* Probable errors not computed because of small number of cases.

#### MEASURING THE READING ABILITY OF ADULTS IN TERMS OF GRADE NORMS

The current interest in improving the reading habits of adults has led to numerous conjectures relative to the grade levels represented by the reading ability of adults. In the previous sections we have summarized important facts relative to the ability of adults to comprehend the content of general books, magazines, and newspapers. The most serious limitation to a thoroughgoing interpretation of these facts is the lack of standards. What the various scores mean in relation to graded progress must be determined by more extensive experimentation.

To supplement the data already presented, it was thought advisable to measure reading achievement in terms of grade norms. From these could be ascertained within certain limitations, first, what is the general grade level of adult reading ability; and, second, whether ability is markedly different among different classes of adult readers.

In the absence of standardized adult tests to serve this purpose, it was necessary to utilize a general test which carries a wide range of grade norms. The one chosen was the Monroe Standardized Silent Reading Test. It consists of a series of short passages followed by questions or directions. In some cases the question is answered by drawing a line under the word representing the right answer. In other cases, the examinee is directed to write out the answer to a question in order to show his understanding of the item. The tests have been prepared to measure a wide range of reading achievement: Test I, for use in grades III, IV, and V; Test II, in grades VI, VII, and VIII; and Test III, in grades IX to XII, inclusive. The number of exercises answered correctly in a period of four or five minutes makes the score. The raw scores can be transmuted into "B" scores, ranging from 2.0 to 17.0+. They indicate the school grade in which pupils normally attain the equivalent raw scores.

#### ADDITIONAL GROUPS TESTED

In addition to the 756 adults comprising the groups shown in Table XI, certain other groups were given the Monroe test. They are listed in Table XVIII. These groups made a total of 1,690 adults whose achievement in silent reading was determined in grade norms. Probably the most important and undoubtedly the most representative group numbered 151 adults, of whom 75 lived in Coatsburg, Illinois, and 76 on adjacent farms. The village people included all men and women of the total population of 200 who were willing to co-operate. A random sampling was taken from the surrounding rural area. The mean age of the village group was 44.9 years, and of the rural group, 43.5 years. In each case, the mean grade last attended

in school was the eighth, the extremes ranging from third to twelfth in the village, and from fourth to twelfth on the farms. Occupational interests found in Coatsburg are representative of a typical village. In professional service were the doctor and banker; in trade, the merchant; in building and construction, the carpenter, painter, and paper-hanger; in mechanical industries, the automobile mechanic; in agriculture, the farmers; and in the unskilled labor group, the majority of the citizens who

TABLE XVIII

ADDITIONAL GROUPS TESTED ON THE MONROE STANDARDIZED  
SILENT READING TEST

Name	Grade- Place- ment	Geographical Location	Number
Cross-section of rural population			
1. Villagers.....	8	Coatsburg, Ill.	75
2. Farmers.....	8	Adjacent area	76
Sampling of negro population			
1. Indigent adults.....	7	Columbus, Ohio	121
2. Selected negro men.....	8	Chicago, Ill.	125
3. Florida group.....	9	18 Florida cities	537
		Total.....	934

work at what they can when they can. The reading ability of these persons is probably highly representative of the reading ability of similar populations in the Middle West.

Because a large proportion of the negro population has had limited educational opportunities and engages in little reading, it seemed desirable to study the reading achievement of several groups in widely distributed areas. One group included 121 indigent men and women who applied for aid at the Goodman Guild in Columbus, Ohio,<sup>3</sup> and who stated that they were able to read and write. Of this number, 48 were women and 73, men.

<sup>3</sup> Data relative to this group were obtained by Dale and Tyler in their study of factors of difficulty inherent in materials pertaining to the field of health.

The mean age for the entire group was 26.2 years. The previous education claimed by this group varied from little or no schooling to high-school graduation. The mean grade last attended was the seventh.

A second group included 125 negro men of Chicago.<sup>4</sup> Because of the greater ease with which group contacts could be made, subjects were selected from such organizations as the lodge of Elks and Legion posts. Of the 265 who were asked to co-operate, 140 refused. The most common reason for refusal, given by 22.5 per cent, was inability to read. The rest of the 140 were less frank, but their reasons suggested poor reading ability. It is evident, therefore, that the 125 who co-operated in the study were not altogether representative of the negro male population of Chicago. The amount of education reported by this group ranged from fourth grade to third year in dental college, the median falling at eighth grade. An occupational classification of this group showed that the largest number, 20 per cent, were postal employees. The remainder were engaged in minor types of service ordinarily rendered by negroes in a large city.

A third group included 537 colored adults in eighteen cities of Florida. All were engaged in group educational activities under the direction of the Agricultural and Mechanical Arts College at Tallahassee, Florida. Their mean age was 38 years. The mean grade last attended in school was the ninth. Clearly this group, like the Chicago group, was composed of negroes somewhat above the average of their race in formal education.

#### AT WHAT GRADE LEVELS DO ADULTS READ?

The achievement records of all groups on the Monroe test are summarized in Table XIX. The left-hand column indicates the range of "B" scores, or grade scores. The columns to the right show the number and percentage of adults making each score. The entries in the table show, first, a very wide range of scores. This is to be expected, since the groups differed markedly in

<sup>4</sup> This part of the study was carried out by G. T. Wiggins, whose complete report of "The Reading Habits, Interests, and Achievements of Negro Male Adults" is in unpublished form in the Department of Education Library, University of Chicago.

educational status. Seven adults obtained a score of 16.95 or above, that is, approximately grade 17. Seventy-seven received scores below 2.95, or less than the norm for grade 3. The mean score, 7.81, shows that the 1,690 adults tested were able to read with an average proficiency equal to the normal expectation of

TABLE XIX

NUMBER AND PERCENTAGE OF ADULTS IN SIXTEEN REPRESENTATIVE GROUPS MAKING VARIOUS GRADE SCORES ON THE MONROE STANDARDIZED SILENT READING TEST

Range of "B" Scores	Number	Per Cent
16.95 or above.....	7	0.41
15.95-16.95.....	9	0.53
14.95-15.95.....	30	1.78
13.95-14.95.....	102	6.04
12.95-13.95.....	122	7.22
11.95-12.95.....	62	3.67
10.95-11.95.....	83	4.91
9.95-10.95.....	74	4.38
8.95- 9.95.....	184	10.89
7.95- 8.95.....	72	4.26
6.95- 7.95.....	82	4.85
5.95- 6.95.....	170	10.06
4.95- 5.95.....	125	7.40
3.95- 4.95.....	243	14.38
2.95- 3.95.....	248	14.66
Less than 2.95.....	77	4.56
Total.....	1690	100.00

Mean = 7.81 ± .06

S.D. = 3.89 ± .04

pupils in the eighth month of the seventh grade. Somewhat less than half of the adults tested, 44 per cent, had reached or surpassed a level of achievement equivalent to the reading norm for pupils in the eighth grade of the elementary school.

Further inspection of the entries in the table shows that the scores tended to cluster around certain grade levels, namely, third, fourth, fifth, sixth, ninth, and thirteenth. The fact that about one-third of the persons tested ranked below fifth grade



on the Monroe test recalls an observation made earlier with respect to achievement on the adult reading tests. One-third of the persons whose reading ability was measured by the latter tests were found to obtain scores below 40 out of a possible 92. It seems significant that the same proportion of both groups should manifest an ability in reading that undoubtedly prevents them from engaging satisfactorily in mature reading activities. Since the intelligent functioning of a democratic social order implies an intelligent citizenry, it seems socially imperative that the reading efficiency of large elements of our population should be improved or that more materials suited to their level of achievement should be prepared. The first proposal is receiving increasing attention from civic and federal authorities who have combined forces in the interest of adult education. In connection with the alternative proposal, there is a persistent need for more materials appropriately graded for adults whose reading scores fall below 6.95.

GRADE LEVELS ATTAINED BY TWELVE GROUPS  
OF 756 ADULTS

Table XX shows "B" scores made on the Monroe test by the twelve groups described earlier. The mean score, 9.68, is significantly higher than the mean score for all groups tested. Despite this fact, about 30 per cent of the group failed to attain a level of efficiency which approaches mature reading, that is, seventh grade. Again, the observation can be made that approximately the same percentage fell below a score of 40 on the Adult Reading Test.

Figure 7 has been prepared to show more clearly the distribution of scores obtained by the twelve groups. As can readily be observed, the scores tend to cluster around three areas. About one-third fall in the area from 2 to 6; another third range from 7 to 12; and the remainder, from 13 to 17. These modal tendencies mark roughly the elementary, secondary, and college levels. Were the measurement of reading ability to be extended to include a wider sampling of adults, the distribution of

obtained scores would presumably conform fairly well to the normal curve. It is apparent from the evidence shown in Figure 7 that adults are substantially differentiated with respect to reading ability.

TABLE XX  
READING ABILITY OF 756 ADULT SUBJECTS AS MEAS-  
URED BY THE MONROE STANDARDIZED  
SILENT READING TEST

Range of "B" Scores	Number	Per Cent
16.95 and over.....	6	0.8
15.95-16.95.....	6	0.8
14.95-15.95.....	27	3.6
13.95-14.95.....	85	11.2
12.95-13.95.....	97	12.8
11.95-12.95.....	41	5.4
10.95-11.95.....	44	5.8
9.95-10.95.....	51	6.8
8.95- 9.95.....	95	12.6
7.95- 8.95.....	40	5.3
6.95- 7.95.....	32	4.2
5.95- 6.95.....	62	8.2
4.95- 5.95.....	51	6.8
3.95- 4.95.....	68	9.0
2.95- 3.95.....	44	5.8
1.95- 2.95.....	7	0.9
Total.....	756	100.0

Mean=9.68±.09

S.D.=3.82±.06

The mean achievement of each group and the standard deviation of the mean are given in Table XXI. In general, there is a definite tendency for the mean score to increase with the number of years in school. Certain exceptions may be noted. For example, both the Berea Foundation and the A and M Junior High School groups fall below the Glenn Street School group, which was classified as elementary. This circumstance may be explained in part by the fact that the two junior high schools in question admit young people of limited education. The parent-teacher groups rank somewhat lower than their educational

status leads one to expect, and substantially lower than seems compatible with their superior accomplishment on the adult tests. It seems reasonable to attribute the rank on the Monroe test to the time element which tends to penalize adults who are

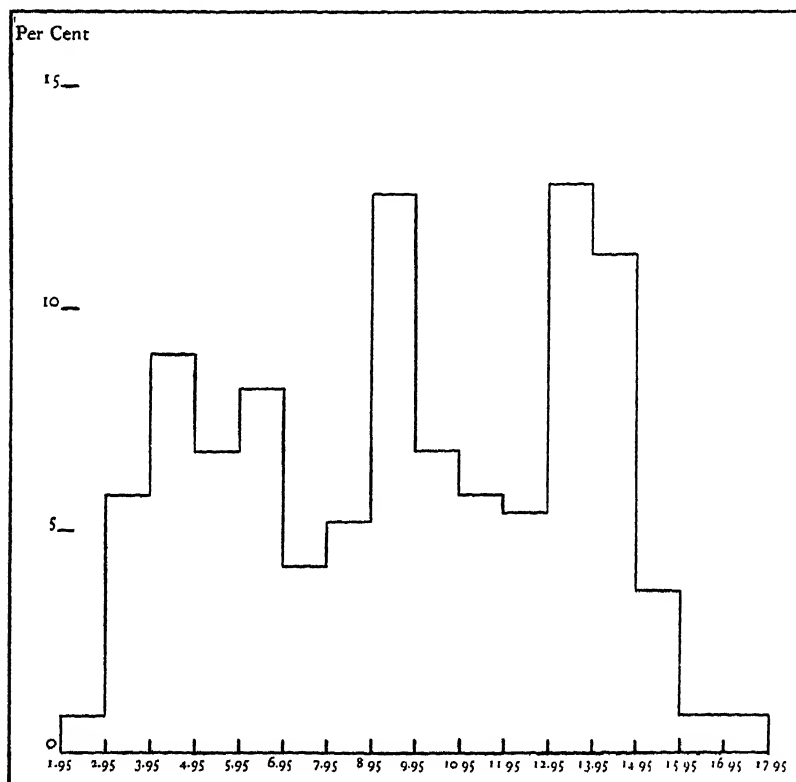


FIG. 7.—Scores of 756 adults on the Monroe Standardized Silent Reading Test

not attending school. The high rank of the Berry High School group probably has little real significance because of the small number of cases. In spite of these exceptions, the data imply that reading efficiency continues to improve with attendance at school, even at upper levels. Although the differences in mean scores at successive levels may not be highly significant, the general trend of improvement cannot be dismissed lightly.

For the sake of further comparison, let us assume that adults whose reading ability measures 7.0 or above have attained a reasonable proficiency in reading. We may then ask, What percentage of adults in each group failed to reach the acceptable level of seventh-grade efficiency? The answer to the question

TABLE XXI

MEANS AND STANDARD DEVIATIONS OF THE SCORES OF TWELVE  
ADULT GROUPS ON THE MONROE STANDARDIZED  
SILENT READING TEST

Group	Mean	S.D.
Berry High School (Juniors and Seniors)*..	14.10	2.04
Berea College.....	12.56 ± .18	2.68 ± .13
Berry College.....	12.34 ± .19	2.70 ± .14
A & M Model Senior High School.....	11.63 ± .27	3.48 ± .19
Berea Academy.....	11.34 ± .20	2.89 ± .14
Rabun Gap.....	10.20 ± .33	3.13 ± .23
Parent-teachers.....	9.47 ± .15	1.96 ± .10
Berry High School (Freshmen).....	7.95 ± .42	4.16 ± .30
Glenn Street School*.....	6.50	2.75
A & M Model Junior High School.....	6.24 ± .28	2.86 ± .20
Berea Foundation.....	6.09 ± .14	2.01 ± .10
Evening schools.....	5.49 ± .14	1.70 ± .10
Entire group.....	9.68 ± .09	3.82 ± .06

\* Probable errors not computed because of small number of cases.

is shown in Figure 8. Evening schools were found to contain the highest percentage of adults with scores below 7.0, namely, 8.2. None of the Berry High School group attained scores below 7.0. As explained earlier, they were too few in number for reliable generalizations.

An important fact revealed by the diagram is that a large number of deficient readers were found in most of the groups tested. This circumstance can hardly be attributed to mere chance. It seems rather to suggest that deficient adult readers persist somewhat generally. Abundant evidence is available to support the present findings concerning the inadequate preparation of high-school and college students to read much of the

material prescribed for them. Less direct but equally convincing evidence of immature reading ability among adults may be gleaned from facts pertaining to their reading interests and habits.

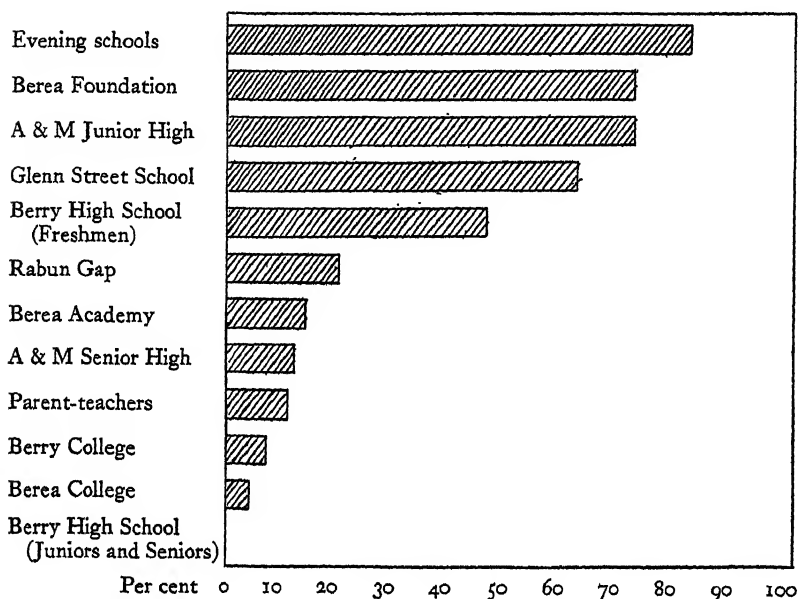


FIG. 8.—Percentage of adults below seventh-grade level of reading achievement as determined by the Monroe test. (Adapted from Cleary, *op. cit.*, p. 50.)

#### ACHIEVEMENT ON MONROE TEST COMPARED WITH ACHIEVEMENT ON THE ADULT READING TESTS

A comparison of Table XVI with Table XIX reveals differences in the achievement of 756 adults as measured by the adult reading tests and the Monroe test. In some cases, the rank attained in reading adult materials is lower than the grade rank in comprehension seems to warrant. Four conspicuous examples are the Berry High School Juniors and Seniors, who ranked first on the Monroe test and sixth on the adult tests; the A and M Seniors, who ranked fourth and eighth respectively; the Glenn Street Elementary students, whose rank of nine

on the Monroe test was lowered to eleven when reading adult material; and the A and M Juniors, whose grade rank in silent reading was tenth and whose rank in reading adult material was twelfth and lowest.

More striking variations may be noted in the opposite direction for groups who read adult material relatively better than their grade-rank in silent reading implies. For example, parent-teacher groups ranked first on the adult tests and seventh on the Monroe test. Berea Academy, given second place in reading materials commonly read by adults, ranked fifth according to grade norms. The evening-school groups showed a difference in rank from nine to twelve on the respective measures of reading ability.

A rough indication of the relationship between ability to read as measured by the two tests is shown by a rank correlation of .623.<sup>5</sup> More specific relationships are given in Table XXII. These relationships are expressed in terms of coefficients of correlation which indicate the agreement between achievement on the Monroe test and comprehension of materials in Forms 1 and 2 of the adult test. None of the coefficients is high enough to show close agreement. The disparity in relationship may be due to several influences. The tests may not be altogether reliable, or they may measure somewhat different abilities. Some groups may read adult materials with a proficiency beyond that manifested by the Monroe test because of familiarity with general materials. The explanation may lie in the timed conditions attached to the latter test or in some other contributing factor.

Probably the most significant fact to be derived from the table is that in general the scores of adults ranking lowest on the Monroe test correlated highest with scores on the adult tests. One may infer, therefore, that for adults of limited proficiency

<sup>5</sup> Spearman's formula based on rank differences is

$$P = 1 - \frac{6\sum(v_x - v_y)^2}{n(n^2 - 1)}.$$

in reading the Monroe test indicates with reasonable accuracy the ability of the group to read adult fiction and non-fiction of a general sort.

DO ADULTS TEND TO ATTAIN HIGHER LEVELS OF COMPREHENSION WITH INCREASED EDUCATIONAL TRAINING?

This question can be answered in a general way by comparing the mean reading achievement of each group, Tables XX and

TABLE XXII  
CORRELATIONS BETWEEN SCORES ON FORMS 1 AND 2 OF THE ADULT  
READING TEST AND THE MONROE STANDARDIZED  
SILENT READING TEST

Groups	Monroe and Fiction (Form 1)	Monroe and Non-Fiction (Form 2)
Glenn Street*	.61	.54
Rabun Gap	.59 ± .07	.65 ± .06
Parent-teachers	.50 ± .06	.45 ± .06
Berea Foundation	.49 ± .05	.43 ± .06
A & M Senior High School	.48 ± .06	.27 ± .07
Evening schools	.43 ± .07	.31 ± .08
Berry High School (Freshmen)	.41 ± .08	.35 ± .09
A & M Junior High School	.38 ± .08	.18 ± .10
Berry College	.34 ± .06	.35 ± .06
Berry High School (Juniors and Seniors)*	.32	.33
Berea College	.30 ± .06	.25 ± .06
Berea Academy	.28 ± .06	.42 ± .06

\* Probable errors not computed because of small number of cases.

XXI, with educational training, Table XI. There is evidence of close agreement between educational training and mean achievement on the Monroe test, the most obvious exceptions being noted in the Berea Foundation, the A and M Junior High School, and the parent-teacher groups. Less agreement as shown by rank order is found between educational training and ability to read fiction, as measured by Form 1 of the adult test.

While there is no reason to expect absolute agreement, some variations are both unexpected and interesting. The apparent superiority of the Berea Academy to other secondary school

groups on the Monroe test is even more marked than on the fiction test, where it ranks slightly above the college groups tested. Satisfactory explanations for this circumstance cannot be found in the evidence at hand. The A and M Junior High School ranks not only lower than other groups similarly classi-

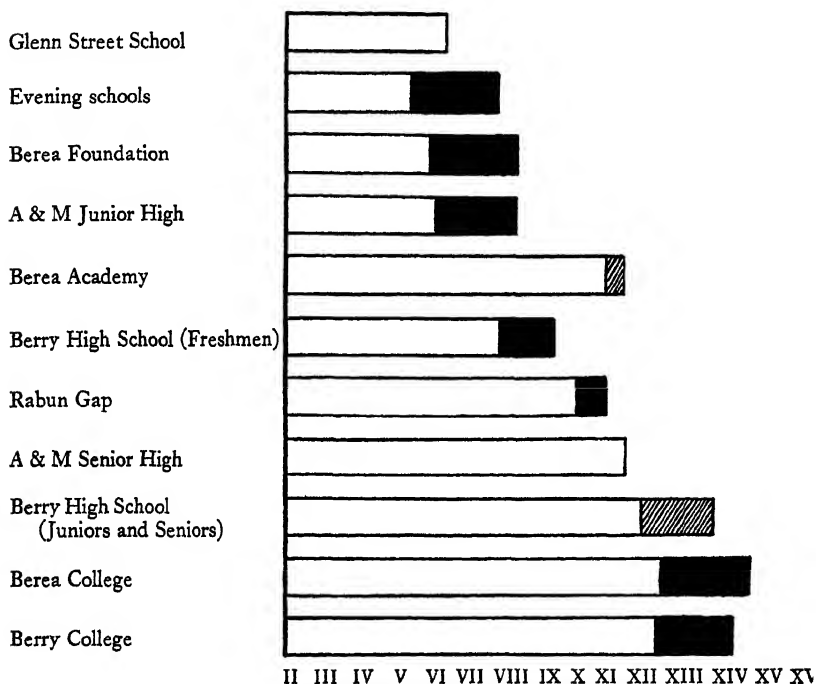


FIG. 9.—School grade and reading grade achievement. (Portion in black represents reading retardation; shaded portion, reading acceleration.) (Adapted from Cleary, *op. cit.*, p. 47.)

fied in ability to read fiction but lower than groups classified as elementary. Similarly, the A and M Senior High School group ranks conspicuously lower than others with which it may reasonably be compared. These two groups, representing elements of the negro population, are handicapped by meager reading facilities. They probably engage in little independent reading.

In Figure 9 is given a graphic comparison of reading achievement, as measured by the Monroe test, and general educational



training, as indicated by grade-placement or last grade in school. While the figure shows plainly that reading achievement tends to parallel educational training in a general way, only four of the eleven groups had acquired a reading ability at or above the expected norm. The Glenn Street School and the A and M Senior High School groups reached average expectancy for their levels of schooling, while the Berry High School (junior and senior) and Berea Academy groups exceeded it. The tendency for reading retardation to grow less in amount as schooling progresses is to be expected, since disability in reading would naturally be reflected in a lack of general progress. Exceptions are to be noted in the two college groups. Since the parent-teacher group was not in school, no attempt was made to estimate their ratio of achievement.

Despite the fact that there is a general correspondence between average reading achievement and educational training, individual records tend to depart from this general trend.

#### ACHIEVEMENT OF THE VILLAGE GROUP

What is the reading ability of adults living in village and rural areas of the sort represented by Coatsburg, Illinois? This question can be answered by reference to Table XXIII. Entries in the table show that mean score, range in achievement, and variability of the group scores are similar for the village and rural groups. The mean score of the combined group, 7.92, agrees closely with the mean score of the total 1,690 adults tested, shown in Table XIX to be 7.81. In view of the fact that the total group included college students and college graduates, the similarity in mean achievement is not expected. This agreement suggests that the Coatsburg groups may fairly represent the class of reader termed "average" in larger and more diversified groups. The investigation needs to be extended, however, before we can define the reading level of the average adult at approximately eighth grade, as the present data indicate.

What is the reading ability of adults when they read orally? This question arose in connection with the Coatsburg groups.

From their mean ages, 44.9 and 43.5 years, the inference seemed warranted that their training in reading might have been received at a time when oral rather than silent reading prevailed in classrooms. Their proficiency in oral reading, therefore, might presumably surpass that of silent reading.

TABLE XXIII

NUMBER AND PERCENTAGE OF 151 VILLAGE AND RURAL ADULTS MAKING VARIOUS GRADE SCORES ON THE MONROE STANDARDIZED SILENT READING TEST

GRADE SCORE	75 VILLAGE PEOPLE		76 FARM ADULTS		COMBINED GROUP	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
16.95 or above.....			1	1.32	1	0.66
15.95-16.95.....			2	2.63	2	1.32
14.95-15.95.....	2	2.67			2	1.32
13.95-14.95.....	1	1.33	3	3.95	4	2.65
12.95-13.95.....	5	6.67	2	2.63	7	4.64
11.95-12.95.....	6	8.00	1	1.32	7	4.64
10.95-11.95.....	8	10.67	5	6.58	13	8.61
9.95-10.95.....	3	4.00	5	6.58	8	5.30
8.95- 9.95.....	2	2.67	11	14.47	13	8.61
7.95- 8.95.....	3	4.00	7	9.21	10	6.62
6.95- 7.95.....	5	6.67	5	6.58	10	6.62
5.95- 6.95.....	7	9.33	5	6.58	12	7.95
4.95- 5.95.....	9	12.00	14	18.42	23	15.23
3.95- 4.95.....	16	21.33	9	11.84	25	16.56
2.95- 3.95.....	8	10.67	5	6.58	13	8.61
Less than 2.95.....			1	1.32	1	0.66
Totals.....	75	100.01	76	100.01	151	100.00
Mean.....	7.80±.28		8.04±.27		7.92±.19	
S.D.....	3.61±.20		3.45±.19		3.53±.13	

Interesting comparisons are afforded by the data in Table XXIV. The table shows the last grade in school attended by members of the village and rural groups and their grade scores in oral and silent reading. The oral reading scores were obtained through the use of the Standardized Oral Reading Paragraphs, which measure achievement in terms of rate of oral

reading and number of errors made. The average grade score in oral reading for the village adults is 9.1; in silent reading, 7.8. For rural adults these scores are increased respectively to 9.7 and 8.0. Both groups show an average achievement in oral read-

TABLE XXIV

GRADE LAST ATTENDED AND GRADE SCORES IN ORAL READING AND IN COMPREHENSION FOR 75 VILLAGE AND 76 RURAL ADULTS

GRADE	75 VILLAGE ADULTS			76 RURAL ADULTS		
	Grade Last Attended	Oral Reading Grade Score	Comprehension Grade Score	Grade Last Attended	Oral Reading Grade Score	Comprehension Grade Score
II.....				0	1	1
III.....	1	2	8	0	0	5
IV.....	4	1	16	2	1	9
V.....	6	7	9	3	4	14
VI.....	4	3	7	5	3	5
VII.....	3	5	5	3	4	5
VIII.....	27	11	3	32	11	7
IX.....	13	12	2	8	9	11
X.....	8	11	3	8	13	5
XI.....	2	20	8	7	27	5
XII.....	7	2	6	8	3	1
XIII.....	0	0	5	0	0	2
XIV.....	0	1	1	0	0	3
XV.....	0	0	2	0	0	0
XVI.....				0	0	2
XVII.....				0	0	1
Total...	75	75	75	76	76	76
Mean...	8	9.1	7.8	8	9.7	8.04

ing approximately one and one-half grades in advance of average achievement in silent reading. Since the mean grade last attended by both groups was the eighth, it is apparent that adults in this community were sufficiently well trained in the mechanics of reading to surpass, years later, the norm for that grade. Their mean achievement in silent reading corresponds

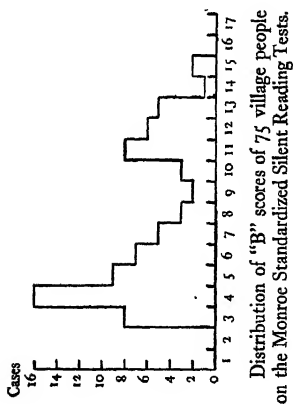
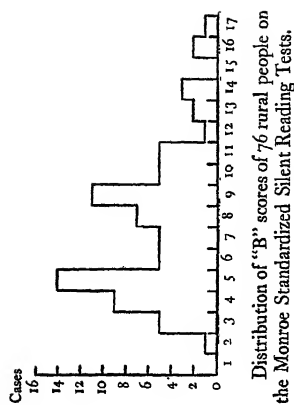
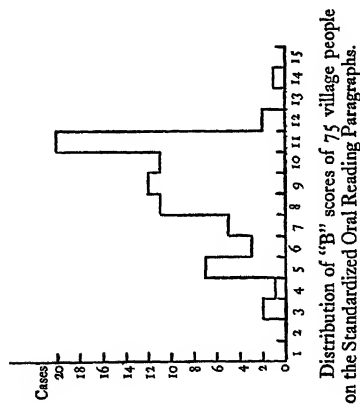
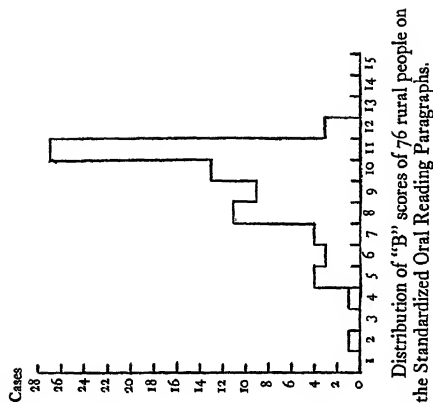


FIG. 10.—Distribution of "B" scores of 75 village and 76 rural adults on the Standardized Oral Reading Paragraphs and the Monroe Standardized Silent Reading Test.

more closely to the amount of schooling received than was noted with respect to the twelve groups reported earlier.

The difference in achievement in oral and silent reading is strikingly illustrated by Figure 10. While it is evident that more adults received high scores in oral than in silent reading, it is

TABLE XXV

NUMBER AND PERCENTAGE OF ADULTS IN EACH OF THREE NEGRO GROUPS  
MAKING VARIOUS SCORES ON THE MONROE STANDARDIZED  
SILENT READING TEST

GRADE SCORES	COLUMBUS GROUP		CHICAGO GROUP		FLORIDA GROUP		TOTAL	
	No.	Per Cent	No.	Per Cent	No.	Per Cent	No.	Per Cent
15.95-16.95.....	.....	.....	1	0.80	.....	.....	1	0.13
14.95-15.95.....	.....	.....	1	0.80	.....	.....	1	0.13
13.95-14.95.....	.....	.....	8	6.40	5	0.93	13	1.66
12.95-13.95.....	.....	.....	9	7.20	9	1.68	18	2.30
11.95-12.95.....	1	0.83	2	1.60	11	2.05	14	1.79
10.95-11.95.....	.....	.....	4	3.20	22	4.10	26	3.32
9.95-10.95.....	1	0.83	6	4.80	8	1.49	15	1.92
8.95- 9.95.....	6	4.96	18	14.40	52	9.68	76	9.71
7.95- 8.95.....	2	1.65	6	4.80	14	2.61	22	2.81
6.95- 7.95.....	3	2.48	15	12.00	22	4.10	40	5.11
5.95- 6.95.....	17	14.05	23	18.40	56	10.43	96	12.26
4.95- 5.95.....	8	6.61	11	8.80	32	5.96	51	6.51
3.95- 4.95.....	22	18.18	10	8.00	118	21.97	150	19.16
2.95- 3.95.....	34	28.10	11	8.80	146	27.18	191	24.39
Less than 2.95.....	27	22.31	.....	.....	42	7.82	69	8.81
Total.....	121	100.00	125	100.00	537	100.00	783	100.01
Mean.....	4.57±.13		8.20±.20		5.79±.09		5.98±.07	
S.D.....	2.08±.09		3.31±.14		2.95±.06		3.08±.05	

quite as evident that some adults ranked low on both types of reading. It is doubtful, therefore, if they can read and comprehend satisfactorily much of the adult material now published that should be of interest to them. Probably at least 40 per cent of the village and rural groups are able to read only relatively simple reading matter.

## HOW WELL DO NEGRO ADULTS READ?

Three groups of negroes numbering more than 800 were included in the study. The distribution of their scores is given in Table XXV. A cursory glance shows that most of the negroes ranked low in comprehension. The mean of the Columbus group is 4.57. This is the achievement normally expected of pupils in the fifth month of the fourth grade. The mean of the Chicago group is 8.20; of the Florida groups, 5.79; and of all groups, 5.98. At the lower extreme of the range it may be noted that below the fourth grade norm are 50 per cent of the Columbus group, about 10 per cent of the Chicago group, and 35 per cent of the Florida group. Only  $1\frac{1}{2}$  per cent of the Columbus group rank as high as tenth grade in reading achievement, whereas 25 per cent of the Chicago group reach or exceed that level.

It may be remembered that the group tested in Columbus was composed of indigent negroes of little education. The Chicago group, on the other hand, included employed negro men, whose formal education had extended on the average to eighth grade. Significant differences in the mean achievement of these groups probably may be explained, therefore, by the selectiveness of the groups. If we assume that a "B" score of 7.0—that is, a level of reading achievement normally attained in seventh grade—is desirable, then it is evident from Table XXV that approximately 70 per cent of the negroes tested are unable to engage intelligently in reading activities at the adult level.

## CONCLUDING STATEMENT

From the findings presented in this chapter, it is obviously impossible to arrive at any very far-reaching conclusions concerning the reading efficiency of adults. The question of how well adults read must be answered ultimately in terms of particular groups reading different kinds of materials for a variety of purposes. Such an answer cannot be obtained from our findings, for the reason that they lack the specificity implied in the foregoing statement. The number of adults tested is too few to permit classification as to age, sex, race, occupation, educational

background, reading experiences, and other factors which presumably influence reading ability. The test materials, although restricted to what we are wont to term "general" materials, deal with a variety of subjects seemingly representative of varying degrees of interest and familiarity. The outcomes of reading by which ability is measured fall far short of all the outcomes of adult reading activities.

It is clear from these limitations that we have made no more than a broadside attack on the problem of how well adults read. If the findings obtained in this fashion have even a small degree of reliability, we may expect to find from extended studies information concerning reading ability that will have practical value for workers with adult groups.

The specific conclusions and implications warranted by the findings presented in this chapter may be summarized as follows:

1. About one-sixth of the adults tested are able to read with a degree of proficiency normally achieved by high-school graduates. Half of this number have attained the norm of college students. Only one-half of one per cent, however, were found to read with the proficiency expected of college graduates. It seems reasonable to conclude, therefore, that adults in this upper one-sixth of the total sampling are sufficiently skilled to read the more difficult types of materials now available.

2. Approximately one-half of the adults tested have attained a sufficiently high level of achievement to enable them to read with reasonable ease and understanding most of the general materials now prepared for adults. For this group, radical changes in the character of available material do not seem imperative. However, a wider production of high-grade material, slightly less difficult than the "better" fiction and non-fiction now produced, should be of distinct advantage.

3. At least one-third of the 1,690 adults who co-operated in the study have not acquired sufficient skill to enable them to engage intelligently in adult reading activities. They read general materials in books, magazines, and newspapers with an

average score of 40 out of a possible 90. Their achievement in silent reading, as measured in terms of grade norms, does not exceed fifth grade. For them the enriching values of reading are denied, unless materials reflecting adult interests be adapted to meet their needs. The data in this chapter suggest that the materials provided should correspond in difficulty to those appropriate for use in the fourth, fifth, and sixth grades. Such a proposal presupposes the availability of still simpler materials for use in promoting functioning literacy and in establishing fundamental reading habits.

4. A considerable portion of the adults tested, approximately one-sixth, is able to read only the simplest newspapers, magazines, and books. A smaller percentage, one twenty-fifth, is able to read only such materials as might appropriately be used in the second grade of the elementary school. Reading content prepared for primary children falls far short of meeting adult needs, yet simple adult material of a high order is not readily available. If the reading efficiency of this group is to be improved through definite training, what materials, then, should be used? The problem is vital and timely. It seems challenging enough and sufficiently widespread in its application to warrant the intensive study of the difficulty of reading materials as presented in the remaining chapters of this report.

To answer precisely the question of how well adults read, there is evident need for a series of carefully controlled studies utilizing various groups of adults, each of which is approximately alike in those personal characteristics that presumably influence reading ability. Such studies will aim to define specific reading abilities for each group with respect to the kind of material read and the outcome desired.



## CHAPTER IV

### WHAT ELEMENTS INFLUENCE THE DIFFICULTY OF ADULT READING MATERIALS?

THE preliminary study reported in chapter iii sought to evaluate the reading efficiency of adults who were classified at various educational levels. The evidence presented indicates that in practically every group tested there was a large percentage of adults who had not attained the maturity in reading expected of them. It seems probable that the reading ability of adults in general has been greatly overestimated by persons who prepare materials for adult readers. It seems probable, also, that much of the reading matter now available is too difficult for readers of limited ability to understand. Hence it fails to reach many persons who are interested in its content and who would read it if they could. Without question, some of this material would reach a larger audience were a reliable technique devised by means of which difficulty could be determined with accuracy.

In the present chapter two assumptions have been made. One is that there are elements inherent in reading materials which are significant indicators of difficulty; the other, that the identification of these elements is an essential step in developing a technique which will help to solve the problem of meeting the individual reading needs of adults. The purpose of the chapter is, first, to identify the elements of difficulty which we have assumed are inherent in reading materials; and, second, to find out how these elements may be utilized in a more accurate estimate of the difficulty of specific books, magazines, and newspapers.

As stated in chapter i, we have limited our study to a determination of elements of difficulty inherent in reading materials. Furthermore, we have restricted the elements to structural ones

which the author uses to express his ideas. This approach to the problem in no way denies that other elements may contribute to difficulty. Concreteness or abstractness of idea, universality of appeal, directness of presentation, and other factors inherent in the content unquestionably are related to ease or difficulty of understanding. Similarly, reading interests, attitudes and motives, intellectual capacity, previous experience, and other factors relating to the reader probably exert large influence on ease of reading. Important as these factors are, they are considered only incidentally in this study. We are concerned primarily with reading materials and the structural elements inherent in their expression that are indexes of difficulty.

The investigation is limited further to materials sought by the general reader without relation to his professional or business interests. Fiction and general non-fiction have been considered universally applicable within certain limitations, such as linguistic area, individual interests, and reading ability. Since detailed studies of the reading activities of adults, as reported by Gray and Monroe, show that about 50 per cent of adults read books, 75 per cent read magazines, and 95 per cent or more read newspapers, these three types of reading matter have been taken as generally representative of what adults read.<sup>1</sup>

From the facts presented in chapter iii, it is clear that all persons do not read equally well. Nor does any one person, as a rule, read all materials equally well. It follows, therefore, that not only do adults differ in ability to read, as has been emphasized earlier, but materials differ in difficulty for the same reader or group of readers. To obtain an index of difficulty for different reading materials was the first step in determining elements of difficulty inherent in them. The second was to make a quantitative study of the elements of expression contained in the materials which might be related to difficulty. In the final step, correlations were calculated between the series of elements

<sup>1</sup> William S. Gray and Ruth Monroe, *The Reading Interests and Habits of Adults* (New York: Macmillan Co., 1929), p. 262.

and the criterion of difficulty for each of the materials studied. Evidence thus obtained was used to identify elements of difficulty in general reading materials.

#### OBTAINING A CRITERION OF DIFFICULTY

In discovering how difficult general reading materials are for adult readers, we gave the Adult Reading Test to 756 adults, as described in chapter iii. It may be recalled that Form 1 of this test contains paragraphs of fiction and Form 2, paragraphs of non-fiction. All paragraphs in both tests were taken from the general books, magazines, and newspapers most widely read by adults. The method of scoring described in Appendix C renders a score for each test paragraph which ranges from +4, the highest possible score, to -4, the lowest possible score. Should any test paragraph be so easy as to be perfectly comprehended by all subjects, its criterion of difficulty would represent the average of all perfect scores, or +4. On the other hand, if a paragraph is so difficult that all subjects make the worst possible responses, as they theoretically may do, the criterion of difficulty, representing the average reading score, would be -4. Average scores for all test paragraphs in Forms 1 and 2 of the Adult Reading Test are given in Appendix D, on pages 334-36. In reading these data one should remember that a high average score designates an easy selection, and a low average score a difficult selection.

#### WHAT ELEMENTS IN THE TEST PARAGRAPHS MAY INFLUENCE DIFFICULTY?

With this question we turn again to the thesis which prompted the present study, namely, that there are elements inherent in reading material which are related to difficulty. The average reading scores obtained on the test paragraphs seem to support this thesis. For example, one paragraph received an average score of 3.0, whereas another had an average score of 0.7. According to the criterion of difficulty accepted in this study, the second paragraph is clearly more difficult than the first. Accord-

ing to our primary assumption, it contains elements of expression which differ in kind and quantity from those contained in the first.

Before such elements could be determined, it was necessary to analyze the paragraphs for the occurrence of elements of expression that may bear some relation to difficulty. In this connection we attempted to compile a reasonably complete list of the elements used in adult fiction and general non-fiction. With this list to guide the analysis of reading materials, it was hoped that the ultimate identification of structural elements of difficulty would be both reliable and comprehensive.

Suggestions were derived from a variety of sources. Some were obtained from studies of children's literature and of certain types of adult reading. Others were suggested by directors and teachers of adult schools who are faced with the problem of choosing appropriate reading materials; by adult students attending evening classes; and by professors of English who are accustomed to analyze style of written discourse. These were supplemented by a careful scrutiny of many different types of reading matter.

Table XXVI lists the expressional elements suggested as potential elements of difficulty. It may be noted that elements numbered from 1 to 41 are primarily properties of words. Those numbered from 42 to 66 belong essentially to sentences. The remaining elements are associated generally with paragraphs of entire selections.

#### EXAMINATION OF THE LIST OF EXPRESSIONAL ELEMENTS

Before accepting the elements listed in Table XXVI for use in experimentation, it seemed essential to examine each element critically in order to determine whether it could be adapted to experimental procedures. What does the element mean? Is it objectively measurable? These are the questions which we sought to answer in examining different elements in the list.

In some cases, the first question could be answered precisely. For example, the meaning of monosyllables, personal pronouns,

TABLE XXVI

ELEMENTS OF EXPRESSION SUGGESTED AS POTENTIAL INDICATORS  
OF DIFFICULTY IN ADULT READING MATERIAL

NUMBER	ELEMENT
	Properties of Words
*1.....	Number of easy words
*2.....	Percentage of easy words
*3.....	Number of different hard words
*4.....	Number of words not known to 90 per cent of sixth-grade children
*5.....	Percentage of words not known to 90 per cent of sixth-grade children
*6.....	Number of different words
*7.....	Percentage of different words
*8.....	Percentage of monosyllables
*9.....	Percentage of bisyllables
*10.....	Percentage of polysyllables
*11.....	First-person pronouns
*12.....	Second-person pronouns
*13.....	Third-person pronouns
*14.....	First-, second-, and third-person pronouns
15.....	Nouns (proper, abstract, and concrete)
16.....	Verbs
17.....	Adjectives (descriptive, limiting)
18.....	Articles (definite, indefinite)
19.....	Adverbs (time, place, manner)
20.....	Conjunctions (co-ordinate, subordinate)
21.....	Interjections
22.....	Prepositions
*23.....	Content words
*24.....	Structural words
25.....	Image-bearing words
26.....	Non-image-bearing words
*27.....	Words beginning with <i>w</i>
*28.....	Words beginning with <i>h</i>
*29.....	Words beginning with <i>b</i>
*30.....	Words beginning with <i>i</i>
*31.....	Words beginning with <i>e</i>
32.....	Words associated with adult living
33.....	Words expressing abstractions
*34.....	Asides, appositives, parenthetical expressions
*35.....	Dialect words
*36.....	Archaic words, rare words
*37.....	Local expressions and coined words
38.....	Poetic and highly literary words
*39.....	Idiomatic expressions
*40.....	Proper nouns of mythology and history
41.....	Technical words

\* Retained as a potential element of difficulty for further study.

TABLE XXVI—*Continued*

NUMBER	ELEMENT
	Properties of Sentences
*42.....	Average sentence-length in words
*43.....	Average sentence-length in syllables
*44.....	Maximum syllabic sentence-length
*45.....	Minimum syllabic sentence-length
*46.....	Range of syllabic sentence-length
*47.....	Number of simple sentences
*48.....	Percentage of simple sentences
*49.....	Number of compound sentences
*50.....	Percentage of compound sentences
*51.....	Number of complex sentences
*52.....	Percentage of complex sentences
*53.....	Number of compound-complex sentences
*54.....	Percentage of compound-complex sentences
*55.....	Number of compound and compound-complex sentences
*56.....	Clauses introduced by subordinate conjunctions
*57.....	Clauses introduced by conjunctive adverbs
*58.....	Clauses introduced by relative pronouns
*59.....	Prepositional phrases
*60.....	Infinitive phrases
*61.....	Prepositional and infinitive phrases
*62.....	Explicit thought-statements
*63.....	Implicit thought-statements
*64.....	Static predication of thought-statements
*65.....	Dynamic predication of thought-statements
*66.....	Figures of speech
Properties of Paragraphs or Entire Selections	
*67.....	Number of words in a selection
*68.....	Number of sentences in a selection
*69.....	Number of ideas in a selection
*70.....	Direct discourse
*71.....	Indirect discourse
72.....	Scenic narration
73.....	Dramatic narration
74.....	Physical associations
75.....	Psychic associations
*76.....	A sequence of ideas to show effects
*77.....	A sequence of ideas to show causes
*78.....	Deductive presentation of a thought
*79.....	Inductive presentation of a thought
*80.....	Enumeration of ideas to show cause and effect
*81.....	Repetition of an idea for emphasis
*82.....	Development of an idea from a topic sentence

and simple sentences is clearly fixed. In other cases, the meaning is variable unless defined arbitrarily for purposes of the study. For this reason we set up certain definitions for such elements as "easy" words, "hard" words, "scenic" narration, "dramatic" narration, and so on. These definitions will be given in later sections of the chapter. In a few cases an element seemed to defy precise definition. For example, when we attempted to define words associated with adult living, we met the difficulty of defining all the objectives, activities, attitudes, and other aspects of adult living. Such an undertaking was obviously impossible. Since words associated with adult living, then, cannot be defined accurately, that element was rejected from the list of elements retained for experimentation.

Answering the first question tended generally to answer the second. That is to say, if an element can be defined precisely, it can be measured objectively in the majority of cases. For example, once we have defined "easy" words, as is done farther on, we can count them as accurately as monosyllables, the meaning of which is established universally. If doubt arose in determining whether an element is objectively measurable, we made repeated counts of the element in the same sample of reading material and compared results of the several counts. If the counts disagreed, then it was obvious that the element does not meet the test of objectivity.

The following paragraphs indicate the nature of the examination made of each element in Table XXVI. Wherever it seems necessary the definition of the element is included.

*Easy and hard words.*—In accordance with the plan adopted by Dale and Tyler in their study of technical reading materials, a word was here assumed to be "easy," regardless of its length, if it is a familiar word, and "hard," if unfamiliar.<sup>2</sup> Familiarity was established by the presence of a word in a composite list<sup>3</sup>

<sup>2</sup> Edgar Dale and Ralph W. Tyler, "A Study of the Factors Influencing the Difficulty of Reading Materials for Adults of Limited Reading Ability," *Library Quarterly*, IV (July, 1934), 384-412.

<sup>3</sup> Edgar Dale, "A Comparison of Two Word-Lists," *Educational Research Bulletin*, X (December 9, 1931), 484-89.

of the most frequent words in Thorndike's *The Teachers' Word Book*<sup>4</sup> and the Word List of the International Kindergarten Union.<sup>5</sup>

Since the occurrence of a word in the Thorndike list indicates that it is among the thousand words most frequently encountered in general reading, and since its presence in the kindergarten list is evidence of its familiarity to children before they enter first grade, the conclusion seems warranted that the word possesses zero difficulty for adults. Seven hundred and sixty-nine words were found by Dale to be common to both lists. These constitute the list of easy words which Dale and Tyler have found to be indicators of ease in technical material.

Words not designated "easy" were here considered "hard," as in Dale and Tyler's study. Again the classification is arbitrary. Although it may seem unduly broad, such a classification recognizes that an extremely common word, like "as," "so," "does," and "get," may bear connotations that make it far more difficult than a less common word, like "bonfire" or "truck," the meaning of which is relatively fixed. Hard words can be accurately determined after easy words have been checked from a given selection. The extent of hardness implied in any word so classified was determined by the next element.

*Words not known to 90 per cent of sixth-grade pupils.*—The inclusion of this element as a probable index of difficulty was suggested by Dale's study of the familiarity of 8,000 common words to elementary-school pupils.<sup>6</sup> Each word was classified by Dale according to the percentage of familiarity it was found to have among 7,878 children in the fourth, sixth, and eighth grades. By administering the list to adults he found that their scores

<sup>4</sup> Edward L. Thorndike, *A Teachers' Word Book of the Twenty Thousand Words Found Most Frequently and Widely in General Reading for Children and Young People*. New York: Teachers College, Columbia University, 1932. Pp. 182.

<sup>5</sup> International Kindergarten Union Child Study Committee, *A Study of the Vocabulary of Children before Entering First Grade*. Washington: International Kindergarten Union, 1928. Pp. 36.

<sup>6</sup> Edgar Dale, "Familiarity of 8,000 Common Words to Pupils in the Fourth, Sixth, and Eighth Grades." Unpublished study, Bureau of Educational Research, Ohio State University, Columbus, Ohio. Pp. 84.



correlated .65 with sixth-grade scores. It seems likely, therefore, that a word not known to 90 per cent of sixth-grade pupils will present definite difficulty to adults of limited reading ability. Support for this hypothesis has been presented by Dale and Tyler in their study of elements of difficulty in technical materials, and by Ojemann in his investigation of factors associated with difficulty of materials used for parent education.<sup>7</sup>

*Different words.*—Claims have been made that range of vocabulary, or vocabulary diversity, as measured by the percentage of different words in a selection is an indicator of difficulty. Two assumptions are made in accepting this element as a measure of vocabulary difficulty. One is that a smaller percentage of different words must have a greater amount of repetition. The other is that repetition tends to make reading material less difficult. The findings of Lively and Pressey are distinctly suggestive of comparative difficulty among vocabularies found in textbooks when range of vocabulary is obtained for thousand-word samplings.<sup>8</sup> By using a combined measure of frequency and range, other investigators have obtained similar findings: Dolch, in his study of school readers; and Patty and Painter, in their evaluation of high-school texts.<sup>9</sup> Vogel and Washburne found that the number of different words in a thousand is the best single indicator of difficulty of a selection for school children, since it correlates highest with their median reading score.<sup>10</sup>

<sup>7</sup> Dale and Tyler, *op. cit.*; Ralph H. Ojemann, "The Reading Ability of Parents and Factors Associated with Reading Difficulty of Parent-Education Materials," *Researches in Parent Education*, II. University of Iowa Studies, Studies in Child Welfare, VIII (March 1, 1934), 11-32.

<sup>8</sup> Bertha A. Lively and S. L. Pressey, "A Method for Measuring the 'Vocabulary Burden' of Textbooks," *Educational Administration and Supervision*, IX (October, 1923), 389-98.

<sup>9</sup> Edward William Dolch, "Vocabulary Burden," *Journal of Educational Research*, XVII (March, 1928), 170-83; W. W. Patty and W. I. Painter, "Improving Our Method of Selecting High-School Textbooks," *ibid.*, XXIV (June, 1931), 23-32; W. W. Patty and W. I. Painter, "Technique for Measuring the Vocabulary Burden of Textbooks," *ibid.*, XXIV (September, 1931), 127-34.

<sup>10</sup> Mabel Vogel and Carleton Washburne, "An Objective Method of Determining Grade Placement of Children's Reading Material," *Elementary School Journal*, XXVIII (January, 1928), 373-81.

*Syllabic length of word.*—Evidence obtained by Bear in an experimental study of the comparative difficulty of monosyllables and polysyllables in children's reading led to the conclusion that long words are generally more difficult than short words.<sup>11</sup>

McCluskey's quantitative analysis of adult reading materials representing six fields of subject matter showed that easy reading matter, embodied in fiction, contains more short words and fewer long words than are found in more difficult selections.<sup>12</sup> In content bearing on psychology and physics, which according to objective tests proved to be most difficult, fewer short words and more long words were discovered than in fiction. The same elements which differentiate easy from difficult passages were found to differentiate also moderately difficult passages from those of still greater difficulty. The distinction was merely a matter of degree.

*Personal pronouns.*—The hypothesis that the informality with which material is written increases its simplicity and consequently the ease with which it is read, has led other investigators to determine the relationship between number of personal pronouns and reading difficulty. That second-person pronouns are indicators of ease in technical material has been found by Dale and Tyler. For the present study, personal pronouns in the first, second, and third person were taken first as separate elements, and were then combined into a single element for experimentation.

*Other parts of speech.*—The classification of words according to their function in language expression represents the so-called "parts of speech." They include nouns, pronouns, verbs, adjectives, adverbs, conjunctions, interjections, and prepositions. Other investigators have found significant relationship to difficulty only in the case of pronouns and prepositions. In this

<sup>11</sup> The major findings of Bear's study are summarized by George R. Johnson, "An Objective Method of Determining Reading Difficulty," *Journal of Educational Research*, XXI (April, 1930), 283-87.

<sup>12</sup> Howard Y. McCluskey, "A Quantitative Analysis of the Difficulty of Reading Materials." Unpublished study, University of Michigan, 1933.

study, therefore, these two classes of words were isolated for enumeration. Classifications of words according to meaning and association were substituted for classification according to function. They are described in paragraphs that follow.

*Content and structural words.*—The classification of words as “content” or “structural” grew out of the hypothesis that content words, namely, nouns, verbs (except copulative and auxiliary), descriptive adjectives, and descriptive adverbs, tend to influence difficulty by their intrinsic power of conveying ideas. On the other hand, structural words, namely, pronouns, copulative and auxiliary verbs, limiting adjectives, articles, limiting and conjunctive adverbs, prepositions, conjunctions, and interjections were believed to bear a negative relationship to difficulty since their scope of meaning is more nearly constant than is generally true of content words.

*Image-bearing and non-image-bearing words.*—The proposed subdivision of content words into those that produce images and those that do not was based on the assumption that image-bearing words increase comprehension through their expression of experience in the form of mental pictures. Although the enumeration of image-bearing words is theoretically a simple matter of cataloguing words that revive the memory of some sense impression, it is actually a far more complex undertaking. Clearly, the classification of a word as “image-bearing” or “non-image-bearing” is a matter of individual experience and therefore subjective and unreliable. Furthermore, it seems evident that an image-bearing word not only may arouse a simple image but may combine with other words, each bringing its own train of associations to create a complex image. This circumstance obviously adds to the possibility of unreliable enumeration.

Unless individual reactions can be obtained from each reader as to words which produce images and the number of images produced, any classification of words as image-bearing or non-image-bearing is quite certain to be inaccurate and unreliable.

*Words beginning with “w,” “h,” “b,” “i,” or “e.”*—That words whose initial letter is *w*, *h*, *b*, *i*, or *e* bear some relationship

to difficulty is indicated by the findings of Lewerenz and of Dale and Tyler.<sup>23</sup> The former found that these words vary in number according to the ease or hardness of the material in which they occur. That is, words beginning with *w*, *h*, or *b* occur with comparative frequency in easy materials, whereas words beginning with *i* or *e* are relatively few. In difficult reading material the situation is reversed. Dale and Tyler found a significant relationship between the presence of words beginning with *i* in a given passage and its reading difficulty. Slight relationship was noted between words beginning with other "critical" letters and difficulty of technical passages in which the words occurred.

*Words associated with adult living.*—The opinion is sometimes offered that many so-called "difficult" words are quite familiar to the adult reader because they deal with the common affairs of adult life. Being familiar, they are not difficult.<sup>24</sup> The assumption seems tenable that contact with business and social life, as adults know it, results in an understanding of words the meaning of which is derived from such contact. The chief limitation in the use of this element lies in the fact that adult experiences cannot be defined in general terms to fit the unparticularized adult. Before this element can be investigated scientifically, it is necessary to determine what are the common experiences of groups of adults classified according to age, sex, type of environment, amount of schooling, occupation, and so on. The next step is to ascertain how words associated with these experiences influence difficulty for various classes of readers.

*Words expressing abstractions.*—The assumption that abstract words complicate meaning grew out of certain observations relative to differences between the language of very simple and very cultured people. The language of the former is characterized by a simple concrete vocabulary acquired naturally in direct con-

<sup>23</sup> Alfred S. Lewerenz, "Measurement of the Difficulty of Reading Materials," *Los Angeles Educational Research Bulletin*, VIII (March, 1929), 11-16; Dale and Tyler, *op. cit.*

<sup>24</sup> Edward William Dolch, *Reading and Word Meanings* (Boston: Ginn & Co., 1927), pp. 50-51.

tact with experience. The language of cultured people, on the other hand, contains words that represent generalizations and abstractions. Meanings of these words result from varied groupings of experiences whose very difference enables their common elements to survive in isolation.<sup>25</sup> In repeating several trial counts of abstract words in a selection, we noted frequent inaccuracies, probably for the reason that as a person becomes familiar with the many connotations of an abstract word the quality of abstractness is gradually lost. It seems clear that unless a word can be defined precisely as an abstraction, it cannot be considered objectively measurable.

*Asides, appositives, and parenthetical expressions.*—Since extremely elementary material tends to utilize words, phrases, and clauses of co-ordinate rank, it was believed that subordination of certain elements of a thought-unit would present difficulties for the reader of immature reading habits.

*Other expressional elements related to words.*—Other elements, numbered from 35 to 41, inclusive, in Table XXVI were believed to influence difficulty, on the assumption that words which have acquired meaning for persons in one environment may have relatively little significance for others. It seems probable that four of these elements can be selected from reading material with considerable accuracy. They are "dialect" words, which are sometimes italicized; "archaic" expressions and "rare" words, which can be recognized by their unusualness; "local" expressions and "coined" words, frequently indicated by quotation marks; and proper nouns pertaining to mythology and history.

Other elements appear to be less easily recognized. For example, to designate a word as "highly literary" involves subjective judgment and tends to result in unreliable enumeration. This element was rejected, therefore, despite the fact that Ayer has shown in her study of difficulties in reading history that

<sup>25</sup> C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (New York: Harcourt, Brace & Co., 1927), p. 213.

literary embellishments baffle comprehension for children.<sup>16</sup> An accurate enumeration of idiomatic expressions seems impossible, for the reason that they have become characteristic of our language and are not readily identified. They were rejected together with technical words which presumably occur infrequently in general, non-technical material.

*Length and kind of sentences.*—Studies of elementary-school readers indicate that authors of these books attempt to adapt materials to different grade levels by varying the length and complexity of sentences. For example, Harris found a constant increase in average length of sentences from the first to the sixth grades, although the amount of increase varied at different levels.<sup>17</sup> She also discovered a decrease in the number of simple sentences and an increase in the number of complex sentences over the same school period. A marked increase was further observed in the occurrence of compound and compound-complex sentences, although the percentage was smaller.

Investigators who have attempted to determine the relationship between length and kind of sentences and difficulty of reading materials have reported findings that are not altogether consistent. In the field of adult reading, Dale and Tyler found a significant relationship between length of sentence in words and difficulty of comprehension of technical materials. The relationship was noticeable, though not statistically significant, between types of sentences and reading difficulty. McCluskey discovered relatively short sentences in books of easy fiction, but longer and more complex sentences in selections from psychology and physics.

In the field of children's reading, Vogel and Washburne found simple sentences one of the most reliable indexes of easy reading material. Two other investigators, Orndorff and Thompson, agree that although a short sentence may require less effort to

<sup>16</sup> Adelaide M. Ayer, *Some Difficulties in Elementary School History* (New York: Bureau of Publications, Teachers College, Columbia University, 1926), p. 10.

<sup>17</sup> Helen C. Harris, "The Development of Language Ability during the Elementary School Period." Unpublished Master's thesis, Dept. of Education, University of Chicago, 1930. Pp. 105.

read, sentence-length is of no consequence so far as comprehension is concerned.<sup>18</sup> Their findings indicate that the effect upon the reader is the same, whether the sentence is long and involved or short, simple, and emphatic. Several weaknesses noted in Orndorff's study probably tend to invalidate the findings. The number of cases is small. Speed is emphasized. The test materials are unstandardized and too long for the attention-span of sixth-grade children. Using the same test twice in succession appears to be a further weakness.

In Thompson's study, a probable weakness lies in the use of narrative material only. An examination of the selections used seems to show an overpotency of interest and excitement, which may so illuminate certain high spots in the reading as to give cues for desired responses to the tests. Had a second paragraph been added, the comprehension of which depended on the pupil's ability "to select, weigh, compare, and organize the elements of the paragraph,"<sup>19</sup> the results might have shown closer agreement with the more extensive studies cited earlier.

Five measures of sentence-length were used in the present study. All of them may be measured objectively. The number of words in a sentence was the measure of length usually considered. Length expressed in number of syllables was also used on the assumption that a measure by component parts is more discriminative than a measure by the sum of an indefinite number of parts. Other measures of sentence-length that are variations of the same element include "maximum syllabic" length, that is, the length of the longest sentence; "minimum syllabic" length, that is, the length of the shortest sentence; and "range of syllabic" length, which refers to the number of syllables between the longest and the shortest sentence in a selection.

<sup>18</sup> Bernice Orndorff, "An Experiment to Show the Effect of Sentence Length upon Comprehension." Master's thesis, Dept. of Education, University of Iowa, 1925. Pp. 80; Ruth Culver Thompson, "The Effect of Length of Sentence upon Comprehension." Master's thesis, University of Pittsburgh, 1929. Pp. 40.

<sup>19</sup> Edward L. Thorndike, "Reading as Reasoning," *Journal of Educational Psychology*, VIII (June, 1917), 329.

*Types of subordinate clauses.*—Variants in expression which represent types of subordinate clauses were suggested as probable indicators of difficulty. Subordinate clauses introduced by subordinate conjunctions—that, so that, if, in order that—and clauses introduced by conjunctive adverbs—when, where, how—involve a suspension of judgment as to the outcome of the sentence. It was believed that they would cause greater difficulty than subordinate clauses introduced by relative pronouns—who, which, that.

*Kinds of phrases.*—In the small and concrete vocabulary of very simple people, few phrases have been noted. This observation led to the assumption that phrases complicate content and are, therefore, elements of difficulty. In their study of technical material, Dale and Tyler found that the presence of prepositional phrases increased its difficulty significantly, either by their effect on complexity of thought or on sentence-length. Vogel and Washburne found that the number of prepositions in a selection was one of the four best indicators of difficulty in children's books.

*The question of predication.*—Grammarians used to say that predication was the one essential condition in sentence-formation. Either predication was expressed or it was implied in the context. The modern point of view is quite different. Predication is no longer considered necessary. If it is actually expressed, we say that the sentence is "explicit." If, on the other hand, elements of the sentence are omitted—subject, predicate, modifiers—and the thought-relationships only implied, the sentence is "implicit." Disregard for predication is illustrated by the following brief passage, in which three out of five sentences leave elements to be supplied by the imagination of the reader:

He wore overalls, sweater, an old felt hat. A man of the soil. Obviously. But his eyes; they were of the sky! Blue, searching, steady eyes.<sup>20</sup>

By analyzing selections for predication, we hoped to discover whether the expression or implication of thought-relationships influence difficulty in the same degree and in the same direction.

<sup>20</sup> Item No. 11, Form 1, of the Adult Reading Test.



Two other variants of expression were suggested by the question of predication. They concern different modes of predication, namely, "dynamic" predication, which implies a change of condition; and "static" predication, which merely associates ideas without implying a change of condition. The one expresses a thought by the use of verbs of action in the active voice, while the other utilizes passive verbs and verbs expressing state or continuance. These two modes of expression are commonly considered stylistic devices introduced for desired effects. It was believed, however, that one or the other might bear significant relationship to difficulty of comprehension. This hypothesis, like many others, had its origin in a study of the evolution of human speech. Research in this field shows that in primitive speech the dominant mode of predication employs action words, which bear the character of human mood and human will.<sup>22</sup> It may be assumed, therefore, that dynamic predication promotes understanding more than does static predication.

*What do the author's words mean?*—This question arises when understanding is based not alone on primary denotations of words but on associations introduced for the purpose of clarity, intensity, or enrichment. These associations are commonly referred to as "figures of speech." Whereas deficiencies in literal meaning may be remedied by the use of the dictionary or encyclopedia, obstacles to the understanding of figurative meanings associated with the same words are less readily remedied. On the assumption that figurative language influences the difficulty of reading, five figures of speech most common in general material were suggested as probable indicators of difficulty. They are simile, metaphor, metonymy, synecdoche, and personification.

*Length of selection.*—There is some evidence that brevity of statement is essential to comprehension for the inexperienced

<sup>22</sup> Bronislaw Malinowski, "The Problem of Meaning in Primitive Languages," cited in Ogden and Richards, *The Meaning of Meaning* (New York: Harcourt, Brace & Co., 1927), pp. 332-33.

reader. There is also evidence that it is the better reader who chooses large books, long chapters, or detailed treatises. Dale and Tyler report some relationship between the difficulty of technical material and the number of words contained therein. Although McCluskey reports a similar relationship, he concludes that the number of ideas in a selection is of less consequence in determining difficulty than is the quality of the ideas. The reliability of his conclusion depends for the most part on the accuracy with which the ideas were counted, since ideas probably cannot be counted with the same degree of objectivity as can words and sentences.

*Direct and indirect discourse.*—The assumption is generally made that quoting the words of another, either directly or indirectly, tends to make a selection more easily comprehended. It seems probable that direct discourse is more closely related to ease than is indirect discourse. The greater understanding is explained by the fact that in reading the former, a reader temporarily projects himself into another personality and expresses his sentiments and ideas. Hence he may gain greater understanding of their meanings.

*Types of narration.*<sup>22</sup>—Literary criticism, when directed toward the structure of a novel or a story, recognizes various techniques utilized by the author to produce desired effects. They may be techniques of narration—"scenic," "pictorial," "panoramic," and "dramatic." The first three terms seem to be used interchangeably to describe a single type of narration. They refer to the author's attempt to portray a scene without action, merely by reflecting events and pictures upon his reader's consciousness. Let him, however, take from the scene its suggestion of dialogue, its people, their dress, their actions—all the actual things which he has described—and place them on a stage, so to speak, and he produces a new effect. He has introduced dramatic narration.

<sup>22</sup> Percy Lubbock, *The Craft of Fiction*, New York: Jonathan Cape and Harrison Smith, the Traveller's Library, 1929. Pp. 277; Ralph Philip Boas, *The Study and Appreciation of Literature* (New York: Harcourt, Brace & Co., 1931), p. 152.

For the most part, narration is a question of the reader's relation to the author. By the scenic method the reader is placed face to face with the story-teller, to listen to him report a scene. By the other, the reader is turned toward the story to watch its action. The hypothesis seems warranted that the conversational, active, dramatic method of narration should be less difficult to comprehend than the method which leaves the passive reader to make what he can of a narrated event.

Literary criticism, however, is seldom mathematically exact. Hence it is difficult to define the two methods so sharply that inaccuracies of classification will be obviated.

*Presentation of character.*—Two stylistic devices which were suggested as indexes of difficulty relate to a story-teller's method of presenting character. The first involves the use of physical associations. This method is found in the older type of novel. It depicts a character by the use of sense impressions and experiences drawn from the physical environment. It is believed to promote better understanding than the modern method of developing a character by the presentation of his psychic life—his thoughts, impulses, and emotions. There is a straightforwardness about the first method that gives tangibility to a character, while in the second there is an evasiveness that admits of little substance. It seems probable, therefore, that readers of low ability may experience more difficulty in understanding portrayal of character by the latter method than by the former.

*Techniques of paragraph-development.*—The last seven elements listed in Table XXVI relate to an author's technique of developing paragraphs. He may present a sequence of ideas to show cause or effect. He may develop an idea deductively or inductively. He may enumerate ideas to show both cause and effect, or repeat an idea for emphasis, or develop it from a topic sentence. In considering each of these techniques we have assumed that some of them promote comprehension and others retard it.

SELECTION OF ELEMENTS TO RETAIN FOR  
EXPERIMENTATION

The statement has been made earlier that lack of evidence relating to elements of difficulty in general reading materials demands that the person who is interested in this field of investigation remain open-minded toward expressional elements that suggest some influence on difficulty. Consequently, the selection of elements listed in Table XXVI for further study depended primarily on preciseness of definition and objectivity of measurement.

Elements which seem to defy objective measurement include: image-bearing and non-image-bearing words, words associated with adult living, abstractions, poetic and highly literary words, scenic and dramatic narration, and physical and psychic associations. Consequently, they were rejected from the present study. Technical words were classified in the general category of hard words. Elements representing the classification of words according to function, with the exception of personal pronouns and prepositions, were rejected in favor of elements representing classifications of words according to meaning and association. The remaining sixty-four elements, which survived critical examination, were retained for further experimentation. These elements are indicated by asterisks in Table XXVI.

*Use of the compiled elements.*—Although considerable evidence has been reported to indicate that certain of the elements bear some relation to difficulty, it has been obtained principally in the field of children's reading or in the field of technical reading on the adult level. Evidence is contradictory or wholly lacking concerning other elements. In any case, the influence of a specific element on difficulty cannot merely be assumed to exist for general reading material. Accordingly, each element in the table was considered no more than a potential element of difficulty until its relationship to a criterion of difficulty could be calculated. As previously stated, the criterion accepted in the present

study was the average reading score of adult readers on Forms 1 and 2 of the Adult Reading Test.

Determining the occurrence of each element in the various test items involved a simple count of each element. This was expressed as a numerical total or as a percentage. Of the sixty-four elements used in the study, forty-four occurred one or more times in at least half of the test items. A less frequent occurrence was considered inadequate for correlation. The rejection of the other twenty elements leaves their influence on difficulty an open question. Whether their occurrence in an occasional test item tended to increase the difficulty of that item remains to be determined. Limitation of time and effort would not permit extension of the study to include a larger number of items containing these twenty elements.

#### CORRELATING THE CRITERION OF DIFFICULTY WITH POTENTIAL ELEMENTS OF DIFFICULTY IN THE TEST ITEMS

In accordance with the plan outlined earlier, a series of correlations was calculated to show the relationship between the elements in the test items and the average reading score of 756 adult readers. Since the primary purpose of the study was to determine elements of difficulty in general reading material, the forty-eight items in the two tests were combined into a single series for purposes of correlation.

The first column in Table XXVII presents the coefficients of correlation obtained when the average reading score of all adults was taken as the criterion of difficulty. If the 756 adults tested are fairly representative of the general reading public, then elements identified by using their average score may be regarded as elements of difficulty for the general reader. The second column in the table shows the relationship between the elements in the test items and the average reading scores of the "best" readers. They were the readers whose combined scores on Forms 1 and 2 of the adult test ranked above the third quartile. Their average score was a criterion of the difficulty which they experienced in reading the test paragraphs. In the third column

TABLE XXVII

CORRELATIONS BETWEEN FORTY-FOUR POTENTIAL ELEMENTS OF DIFFICULTY  
AND THE AVERAGE SCORE OF EACH TEST ITEM FOR THREE  
CLASSIFICATIONS OF ADULT SUBJECTS

NUMBER	ELEMENT	CORRELATION COEFFICIENTS					
		All Readers		"Best" readers		"Poorest" Readers	
		r	P.E.	r	P.E.	r	P.E.
1	Average sentence-length in words	-.522 ± .0708		-.431 ± .0793		-.449 ± .0777	
2	Percentage of easy words . . . . .	.520 ± .0710		.271 ± .0902		.529 ± .0701	
3	Number of words not known to 90 per cent of sixth-grade pupils . . . . .	-.513 ± .0717		-.218 ± .0927		-.550 ± .0679	
4	Number of easy words . . . . .	.511 ± .0719		.292 ± .0891		.518 ± .0712	
5	Number of different hard words	-.496 ± .0734		-.191 ± .0938		-.543 ± .0686	
6	Minimum syllabic sentence-length . . . . .	-.491 ± .0739		-.481 ± .0748		-.406 ± .0813	
7	Number of explicit sentences . . . . .	.482 ± .0747		.380 ± .0833		.419 ± .0803	
8	Number of first-, second-, and third-person pronouns . . . . .	.476 ± .0753		.347 ± .0856		.450 ± .0776	
9	Maximum syllabic sentence-length . . . . .	-.474 ± .0755		-.302 ± .0885		-.407 ± .0812	
10	Average sentence-length in syllables . . . . .	-.472 ± .0757		-.289 ± .0892		-.457 ± .0770	
11	Percentage of monosyllables . . . . .	.433 ± .0791		.166 ± .0947		.488 ± .0742	
12	Number of sentences per paragraph . . . . .	.431 ± .0793		.337 ± .0863		.371 ± .0840	
13	Percentage of different words not known to 90 per cent of sixth-grade pupils . . . . .	-.402 ± .0816		-.227 ± .0923		-.409 ± .0811	
14	Number of simple sentences . . . . .	.390 ± .0825		.389 ± .0826		.298 ± .0887	
15	Percentage of different words . . . . .	-.380 ± .0833		-.181 ± .0942		-.441 ± .0784	
16	Percentage of polysyllables . . . . .	-.380 ± .0833		-.077 ± .0968		-.428 ± .0795	
17	Number of prepositional phrases	-.345 ± .0858		-.062 ± .0970		-.370 ± .0840	
18	Number of third-person pronouns . . . . .	.329 ± .0868		.150 ± .0952		.307 ± .0882	
19	Range of syllabic sentence length . . . . .	-.321 ± .0873		-.114 ± .0961		-.279 ± .0898	
20	Number of different words . . . . .	-.291 ± .0891		-.075 ± .0968		-.367 ± .0842	
21	Number of infinitive and prepositional phrases . . . . .	-.283 ± .0896		-.050 ± .0971		-.271 ± .0902	
22	Percentage of content words . . . . .	-.261 ± .0907		-.173 ± .0944		-.232 ± .0921	
23	Percentage of structural words . . . . .	.261 ± .0907		.173 ± .0944		.232 ± .0921	
24	Number of <i>i</i> words . . . . .	-.235 ± .0920		-.120 ± .0960		-.285 ± .0894	

TABLE XXVII—*Continued*

NUMBER	ELEMENT	CORRELATION COEFFICIENTS					
		All Readers		"Best" Readers		"Poorest" Readers	
		<i>r</i>	P.E.	<i>r</i>	P.E.	<i>r</i>	P.E.
25	Number of figures of speech. . . .	-.233 ± .0921		.088 ± .0966		-.377 ± .0835	
26	Percentage of complex sentences	-.229 ± .0922		-.359 ± .0848		-.093 ± .0965	
27	Number of compound-complex sentences. . . . .	.205 ± .0933		.249 ± .0913		.138 ± .0955	
28	Number of infinitive phrases. . .	.199 ± .0935		.038 ± .0972		.300 ± .0886	
29	Number of first-person pronouns	.194 ± .0937		.272 ± .0902		.111 ± .0962	
30	Number of complex sentences. . .	.193 ± .0937		.006 ± .0974		.255 ± .0910	
31	Percentage of bisyllables. . . . .	-.193 ± .0937		-.189 ± .0939		-.187 ± .0939	
32	Number of <i>h</i> words. . . . .	.183 ± .0941		.051 ± .0971		.168 ± .0946	
33	Percentage of simple sentences.	.180 ± .0942		.278 ± .0898		.096 ± .0965	
34	Number of clauses introduced by subordinate conjunctions. . .	-.160 ± .0949		-.198 ± .0935		-.177 ± .0943	
35	Number of <i>w</i> words. . . . .	.146 ± .0953		.045 ± .0972		.127 ± .0958	
36	Number of compound and compound-complex sentences. . . .	.141 ± .0954		.194 ± .0937		.066 ± .0969	
37	Number of clauses introduced by relative pronouns. . . . .	.117 ± .0960		.028 ± .0973		.234 ± .0920	
38	Number of asides. . . . .	-.097 ± .0964		.079 ± .0967		-.211 ± .0930	
39	Total number of words per paragraph. . . . .	.091 ± .0965		.168 ± .0946		.060 ± .0970	
40	Number of <i>b</i> words. . . . .	-.069 ± .0969		.004 ± .0974		-.093 ± .0965	
41	Number of <i>e</i> words. . . . .	-.065 ± .0969		.198 ± .0935		-.153 ± .0951	
42	Percentage of compound-complex sentences. . . . .	.060 ± .0970		.114 ± .0961		.023 ± .0973	
43	Number of clauses introduced by conjunctive adverbs. . . . .	.054 ± .0971		-.018 ± .0973		-.019 ± .0973	
44	Percentage of compound and compound-complex sentences	-.009 ± .0973		.070 ± .0969		-.075 ± .0968	

of the table are shown the coefficients obtained when the elements were correlated with the average reading scores of "poorest" readers, that is, of those individuals whose combined scores ranked below the first quartile. The average scores of this group represented the difficulty which the paragraphs held for its members. A comparison of the three series of correlations indicates whether an element of expression which influences

difficulty for "poorest" readers influences difficulty to the same degree for "best" readers, when each is isolated and when all readers are combined.

In the interpretation of the coefficients in Table XXVII, one needs to remember that the higher the average score on an item the greater the group comprehension. High scores indicate items easily comprehended and low scores indicate items difficult to comprehend. It follows, therefore, in the use of these scores for correlation, that a negative coefficient means that the element is positively correlated with difficulty. A positive correlation, on the other hand, means that the element is negatively correlated with difficulty. Stated in more simple terms, a negative coefficient designates an element of difficulty; a positive coefficient, an element of ease.

The amount of correlation is indicated by the size of the correlation coefficient. All of the correlations may seem low, as one commonly thinks of correlation, yet their significance is to be interpreted in the light of their relative size rather than their absolute size. Of the correlations listed in the table, only the first twenty-one are statistically significant, since a coefficient must be at least .27 to be three times its probable error. Actually, however, if the occurrence of an element has even a small numerical relationship to difficulty, nothing can seemingly justify indifference to it, since unquestionably the relationship didn't "just happen."

#### WHAT ELEMENTS INFLUENCE DIFFICULTY OF GENERAL READING MATERIALS FOR DIFFERENT CLASSES OF READERS?

We are now ready to answer one of the questions which this chapter aimed to answer. The final evidence for identifying elements of difficulty is found in the table just presented. In using the relationships listed in the table for this purpose, we are assuming a causal relationship which by the nature of a limited investigation may not be altogether valid. Inasmuch as all factors have not been controlled, it is possible, though hardly prob-



able, that the relationships may be accounted for by some other factor operating throughout. One may argue, for example, that personal pronouns are related to difficulty in a negative direction because they occur in content which an author presents directly. Hence, it is the direct presentation that is the indicator of ease and not the personal pronouns. The shortcomings of a series of findings based on partially controlled procedures have already been admitted in chapter i. It is in the light of these shortcomings that elements of difficulty are identified.

A cursory examination of entries in Table XXVII shows that in general the hypothesis set up at the outset of the study is valid, namely, that elements representing simplicity of expression correlate in the direction of ease, and that those representing complex, involved expression correlate in the direction of difficulty. Some exceptions to this observation may be noted. For example, we had assumed that complex and compound-complex sentences are indicators of difficulty, since they represent involved thought-patterns. Such was found to be true, however, only when their percentage of occurrence among all kinds of sentences was considered.

Interesting outcomes resulted from analyzing these sentences with respect to the nature of their subordinate clauses. Then it was found that clauses introduced by relative pronouns are slight indicators of ease. Clauses introduced by conjunctive adverbs give some indication of difficulty. Clauses introduced by subordinate conjunctions are indexes of difficulty to a greater degree and for all classes of readers. It appears from this evidence that mere complexity of sentence-form has less influence on difficulty than may be presumed. Moreover, the influence is less than particular modes used in effecting subordination. It appears also that subordinate clauses which delay comprehension by setting up restrictions of manner, degree, and condition offer greater difficulty for all classes of readers than do other types of subordinate clauses. They are the ones, then, that should be used infrequently in preparing material for readers of limited ability.

When the average reading score of all adults was taken as the criterion of difficulty, twenty-three elements were discovered with a relationship to difficulty ranging from .522 for average sentence-length in words to  $-.009$  for percentage of compound and compound-complex sentences. Nineteen elements were found to correlate positively with difficulty for "best" readers. These are indicated in the second column of Table XXVII by negative coefficients ranging from  $-.481$  for minimum syllabic sentence-length to  $-.018$  for clauses introduced by conjunctive adverbs. Twenty-four elements of difficulty were found for "poorest" readers. The coefficients of correlation range from  $-.550$  for number of words not known to 90 per cent of sixth-grade pupils to  $-.019$  for clauses introduced by conjunctive adverbs.

Most of the elements which show relatively low correlation with difficulty occurred in no more than half the test items. This was the minimal occurrence set up arbitrarily for correlation. For example, number of asides, correlating positively with difficulty for all but "best" readers, occurred in only twenty-eight of the forty-eight test items. Furthermore, the occurrence in each item was low, ranging between 1 and 3. A similarly restricted representation was noted for compound-complex sentences, different kinds of subordinate clauses, figures of speech, infinitive phrases, and first-person pronouns.

If we speculate on how much significance should be attached to a low correlation when only a few elements are involved, it seems evident that it has little or no potency beyond the suggestion that a relationship exists. The assumption seems tenable that a more significant relationship might have been discovered had these elements occurred as frequently as did monosyllables, for example. On the other hand, if the materials used as sources of test items are fairly representative of what adults are reading, we may infer that elements found in them tend to occur with a frequency that is "normal" for general materials. That is to say, although asides, for example, might have correlated more closely with difficulty had they occurred in a larger num-

ber of items or with greater frequency in a few items, it is possible that their occurrence represents what is usual in general reading material. If such is the case, then the correlations given in Table XXVII presumably signify not far from the true relationship between expressional elements and difficulty of general materials.

One may assume, therefore, that the normal, occasional occurrence of some elements may contribute to difficulty, yet their influence be too slight and their occurrence too infrequent to command serious consideration. Further study is needed before this assumption can be verified.

A comparison of the three series of correlations in Table XXVII shows the extent to which expressional elements agree in their relationship to difficulty for different classes of readers. For example, elements pertaining to sentence-structure correlate more closely with difficulty for "best" readers than do other elements. For "poorest" readers, on the other hand, elements of vocabulary correlate most closely with difficulty.

It is apparent from the size of the coefficients that the amount of correlation tends to vary in the direction of increasing difficulty for "poorest" readers, and that elements which correlate either positively or negatively with difficulty tend to be of least consequence for "best" readers. In other words, an expressional element, such as percentage of different words, is an element of difficulty for all classes, but its relation to difficulty is markedly more significant for "poorest" readers. Again, percentage of easy words tends to reduce the difficulty of a selection for all classes, but its influence is greatest for "poorest" readers.

In Tables XXVIII, XXIX, and XXX are listed the forty-four elements of difficulty in their order of significance for different classes of readers. As might be expected, more elements are significantly correlated with difficulty in either a positive or a negative direction for "poorest" than for "best" readers. "Significant" elements, that is, those which correlate with difficulty to a degree of .27 or higher, number twenty-four for "poorest" readers and thirteen for "best" readers. Elements of

little significance, that is, those whose correlation with difficulty is below .11, number nine for "poorest" and fourteen for "best"

TABLE XXVIII

SIGNIFICANCE OF ELEMENTS OF DIFFICULTY FOR ALL READERS

Elements of Greatest Significance	Elements of Some Significance	Elements of Little Significance
Average sentence-length in words	Percentage of content words	Number of asides
Percentage of easy words	Percentage of structural words	Total number of words per paragraph
Number of words not known to 90 per cent sixth-grade pupils	Number of <i>i</i> words	Number of <i>b</i> words
Number of easy words	Number of figures of speech	Number of <i>e</i> words
Minimum syllabic sentence-length	Percentage of complex sentences	Percentage of compound-complex sentences
Number of explicit sentences	Number of compound-complex sentences	Number of clauses introduced by conjunctive adverbs
Number of first-, second-, and third-person pronouns	Number of infinitive phrases	Percentage of compound and compound-complex sentences
Maximum syllabic sentence-length	Number of first-person pronouns	
Average sentence-length in syllables	Number of complex sentences	
Percentage of monosyllables	Percentage of bisyllables	
Number of sentences per paragraph	Number of <i>h</i> words	
Percentage of different words not known to 90 per cent of sixth-grade pupils	Percentage of simple sentences	
Number of simple sentences	Number of clauses introduced by subordinate conjunctions	
Percentage of different words	Number of <i>w</i> words	
Percentage of polysyllables	Number of compound and compound-complex sentences	
Number of prepositional phrases	Number of clauses introduced by relative pronouns	
Number of third-person pronouns		
Range of syllabic sentence-length		
Number of different words		
Number of infinitive and prepositional phrases		

readers. It is clear that more elements need to be taken into account when selecting or preparing reading matter for limited

readers than for superior readers. Furthermore, the elements mean considerably more for the former group than for the latter, as has been indicated by the coefficients in Table XXVII.

TABLE XXIX

SIGNIFICANCE OF ELEMENTS OF DIFFICULTY FOR "BEST" READERS

Elements of Greatest Significance	Elements of Some Significance	Elements of Little Significance
Minimum syllabic sentence-length	Number of compound-complex sentences	Number of figures of speech
Average sentence-length in words	Percentage of different words not known to 90 per cent of sixth-grade pupils	Percentage of polysyllables
Number of simple sentences	Number of clauses introduced by subordinate conjunctions	Number of different words
Number of explicit sentences	Number of <i>e</i> words	Number of asides
Percentage of complex sentences	Number of compound and compound-complex sentences	Percentage of compound and compound-complex sentences
Number of first-, second-, and third-person pronouns	Number of different hard words	Number of prepositional phrases
Number of sentences per paragraph	Percentage of bisyllables	Number of <i>h</i> words
Maximum syllabic sentence-length	Percentage of different words	Number of infinitive and prepositional phrases
Number of easy words	Percentage of content words	Number of <i>w</i> words
Average sentence-length in syllables	Percentage of structural words	Number of infinitive phrases
Percentage of simple sentences	Total number of words per paragraph	Number of clauses introduced by conjunctive adverbs
Number of first-person pronouns	Percentage of monosyllables	Number of complex sentences
Percentage of easy words	Number of third-person pronouns	Number of <i>b</i> words
	Number of <i>i</i> words	
	Range of syllabic sentence-length	
	Percentage of compound-complex sentences	

When the differences between the coefficients of correlation for any two classes of readers are examined statistically, it is found that the most significant difference occurred in figures of

speech. The difference in difficulty exerted by this element for "best" and for "poorest" readers is 3.64 times its probable

TABLE XXX

SIGNIFICANCE OF ELEMENTS OF DIFFICULTY FOR "POOREST" READERS

Elements of Greatest Significance	Elements of Some Significance	Elements of Little Significance
Number of words not known to go per cent of sixth-grade pupils	Number of complex sentences	Number of first-person pronouns
Number of different hard words	Number of clauses introduced by relative pronouns	Percentage of simple sentences
Percentage of easy words	Percentage of structural words	Percentage of complex sentences
Number of easy words	Number of asides	Number of <i>b</i> words
Percentage of monosyllables	Percentage of bisyllables	Percentage of compound and compound-complex sentences
Average sentence-length in syllables	Number of clauses introduced by subordinate conjunctions	Total number of words per paragraph
Average sentence-length in words	Number of <i>h</i> words	Percentage of compound-complex sentences
Number of first-, second-, and third-person pronouns	Number of <i>e</i> words	Number of clauses introduced by conjunctive adverbs
Percentage of different words	Number of compound-complex sentences	
Percentage of polysyllables	Number of <i>w</i> words	
Number of explicit sentences		
Percentage of different words not known to go per cent of sixth-grade pupils		
Maximum syllabic sentence-length		
Minimum syllabic sentence-length		
Number of figures of speech		
Number of sentences per paragraph		
Number of prepositional phrases		
Number of different words		
Number of third-person pronouns		
Number of infinitive phrases		
Number of simple sentences		
Number of <i>i</i> words		
Range of syllabic sentence-length		
Number of infinitive and prepositional phrases		

error. A difference of slightly less significance statistically is noted for different hard words. This difference is 3.03 times its probable error.

Despite the fact that the difference in relationship of many

elements to difficulty is not statistically significant for "best" and "poorest" readers, it seems large enough for practical implications. For example, percentage of easy words, number of words not known to 90 per cent of sixth-grade pupils, percentage of monosyllables, percentage of polysyllables, number of prepositional phrases, and number of *i* words are related to difficulty in the same direction for "best" as for "poorest" readers, but in an amount considerably less. One may infer from a comparison of these relationships that reading ability ultimately may reach a level at which comprehension is uninfluenced by the author's mode of expression. Before that level can be identified, it is necessary to discover how well adults who are better readers than our "best" are able to read general reading materials. If we find little or no relationship between their comprehension and the occurrence of structural elements in the passages read, then we may conclude that for such readers difficulty cannot be measured by elements of structure. Presumably other aspects should be considered in selecting and preparing materials which they will find readable. For the less mature reader at lower levels of efficiency, however, the quality of ease or difficulty apparently is of considerable importance in determining whether or not a book is readable.

#### A COMPARISON OF THE FINDINGS WITH THOSE OF SIMILAR INVESTIGATIONS

In comparing elements of difficulty as they have been defined in related studies, we have included only those studies which utilized an experimental procedure similar to the one reported in this chapter. Three seem comparable to the present investigation. The first, by Vogel and Washburne, laid the foundation for an objective determination of elements of difficulty in children's literature. The second, by Dale and Tyler, is a scientific attack on the problem of difficulty of technical material. The third, by Ojemann, is a study of the reading ability of parents and of factors associated with reading difficulty of materials used for parent education. All the studies identify elements of

difficulty in terms of coefficients of correlation. The relative influence of different elements rather than the actual influence is used in comparing the present findings with those obtained from the other three. The reason for this is that the range of correlation varies for the different studies.

Elements of difficulty as defined by all studies generally correlate more closely with difficulty for children than for adults. The same elements correlate less closely with difficulty of technical materials for adults than with difficulty of general adult reading matter. This latter correlation, in turn, is less than for materials used in parent education. For example, easy words, based on Thorndike's first 1,000, has a correlation of .674 with difficulty of children's reading and of .640 with difficulty of parent-education materials. Percentage of easy words, based on Thorndike's first 1,000 and the Kindergarten Word-List, correlates .520 with difficulty of general reading material and .352 with difficulty of technical materials.

It is important to note that the best indicator of difficulty of general materials for "poorest" readers is the second-best indicator of difficulty of technical materials and of parent-education materials. This element, number of words not known to 90 per cent of sixth-grade pupils, correlates  $-.550$  with difficulty of general books, magazines, and newspapers;  $-.380$  with difficulty of technical reading in the field of health; and  $-.730$  with difficulty of subject matter dealing with parent education. It seems equally important to observe that in all types of adult reading studied, complexity of sentence-form, as measured by occurrence of complex sentences, bears a relatively low relationship to difficulty. On the other hand, simplicity of sentence-form, as measured by the presence of simple sentences, is a significant indicator of ease in all adult materials.

Three elements of the fifteen which correlate most closely with difficulty of general materials for "poorest" readers are common to all types of material. They include number of different hard words, number of prepositional phrases, and number of different words. Four others are common to the various



types of adult material studied. They are number of words not known to 90 per cent of sixth-grade pupils, percentage of monosyllables, percentage of easy words, and average sentence-length in words. These seven elements, then, may be thought of as elements most closely related to difficulty of adult materials generally. Of less significance are percentage of complex sentences, percentage of compound-complex sentences, number of first-person pronouns, and percentage of compound and compound-complex sentences.

#### WHAT ELEMENTS IN GENERAL READING SHALL BE USED IN ESTIMATING DIFFICULTY?

The practical importance of identifying elements of difficulty lies in their usefulness in determining what materials are easy or difficult for adults to read and understand. Inasmuch as the results of this study are intended primarily to benefit adults of limited reading ability, it seems desirable to determine difficulty of material for such readers. "Poorest" readers, that is, adults whose combined scores on Forms 1 and 2 of the Adult Reading Test ranked below the first quartile, have been taken as representative of readers of limited ability. Elements of difficulty for this group are shown in Table XXVII on pages 115-16.

Since the "poorest" readers numbered but 190, the question may be raised as to whether this number is an adequate sample of total population which they are taken to represent. We have accordingly obtained a reliability coefficient by splitting the group into random halves and correlating the average score on each test item calculated for the two half-groups. The coefficient of correlation thus obtained is  $.8221 \pm .0316$ . Prediction by the Spearman-Brown prophecy formula<sup>23</sup> gives a probable correlation of  $.9024 \pm .0181$  between two groups, each of which is similar in size to the entire group of "poorest" readers.

<sup>23</sup> The Spearman-Brown formula is stated:

$$r_{nn} = \frac{nr_{11}}{1 + (n-1)r_{11}}$$

Evidence has been frequently adduced which points to the variability among reliability coefficients obtained by the split-halves technique. In view of this evidence, the group was again split into random halves and a second index of reliability computed, as before. This time, a correlation of  $.9254 \pm .0140$  was found between the half-groups, and a probable correlation of  $.9613 \pm .0074$  by application of the Spearman-Brown formula. Since the difference between the two coefficients,  $.0589$ , is significant by the accepted test of significant differences, it seems likely that neither can be taken as an absolute index of the reliability of the group sampled. Furthermore, there is no reason to assume that the extremes of the possible range of coefficients are represented by  $.9024$  and  $.9613$ . The homogeneity of the group so far as reading ability is concerned leads to the assumption, however, that either coefficient may be taken as reasonably reliable. The size of either coefficient seems large enough to justify accepting the average reading scores attained by 190 selected readers as fairly reliable indexes of the difficulty which would be experienced by a larger group of adults of similar reading ability.

Table XXVII shows that the factor most closely correlated with difficulty for "poorest" readers is the number of words in a selection not known to 90 per cent of sixth-grade pupils. The factor next most closely related to difficulty is the number of different hard words in a selection. Further, the percentage of easy words and the number of easy words in a selection are about as closely correlated with difficulty, although in an opposite direction. Some of the factors show little relation to difficulty of comprehension. If the selections studied are typical of the general reading material of adults, these factors do not generally influence its difficulty.

Table XXVII also shows that twenty-four expressional elements are significantly correlated with difficulty of general reading materials of the sort used in the test items, that is, of general magazines, newspapers, and books. Each of these elements may, therefore, be taken as an indicator of the difficulty of

similar material, when difficulty is measured by the occurrence of structural elements. Furthermore, a combination of all elements may be expected to give the best prediction of difficulty. But, obviously, twenty-four are too many to take into account,

TABLE XXXI

CORRELATIONS OF SIGNIFICANT ELEMENTS OF DIFFICULTY WITH  
AVERAGE READING SCORE AND WITH EACH OTHER

Reading Score	READING SCORE	SIGNIFICANT ELEMENTS OF DIFFICULTY*										
		1	2	3	4	5	6	7	8	9	10	11
Reading Score	1.000	-.550	-.543	-.529	-.518	-.488	-.457	-.450	-.449	-.441	-.428	-.419
Elements*												
1.			.876	-.894	-.847	-.833	.660	-.713	.485	.424	.801	-.463
2.				-.963	-.890	-.819	-.558	-.539	.390	.598	.740	-.362
3.					.952	.836	-.573	.612	-.398	-.559	-.743	.421
4.						.804	-.518	.593	-.354	-.585	-.702	.439
5.							-.657	.393	-.446	-.399	-.861	.423
6.								-.659	.916	.171	-.687	-.786
7.									-.640	-.190	-.578	.702
8.										.076	.462	-.845
9.											.349	-.088
10.												-.434
11.												
12.												
13.												
14.												
15.												
16.												
17.												
18.												
19.												
20.												
21.												
22.												
23.												
24.												
Mean	0.87	9.83	26.12	74.06	83.81	70.92	27.31	9.54	19.24	64.73	10.67	6.50
S.D.	0.57	6.21	9.28	8.07	10.31	6.99	11.85	5.96	7.09	5.06	6.26	2.61

\* Significant elements of difficulty:

1. Number of words not known to go per cent of sixth-grade pupils.
2. Number of different hard words.
3. Percentage of easy words.
4. Number of easy words.
5. Percentage of monosyllables.
6. Average sentence-length in syllables.
7. Number of first-, second-, and third-person pronouns.
8. Average sentence-length in words.
9. Percentage of different words.
10. Percentage of polysyllables.
11. Number of explicit sentences.

especially since the most significant elements frequently measure approximately the same thing. For example, number of easy words and percentage of easy words are merely two ways of measuring the same element. Similarly, number of words not

known to go per cent of sixth-grade pupils and number of different hard words both measure hardness of vocabulary. In such cases it is apparent that the number may be reduced by using only one of two closely related elements.

The usual method of discovering how much relationship exists among a group of elements is that of intercorrelation. By this

TABLE XXXI—Continued

SIGNIFICANT ELEMENTS OF DIFFICULTY												
12	13	14	15	16	17	18	19	20	21	22	23	24
-.409	-.407	-.406	-.377	-.371	-.370	-.367	.307	.300	.298	-.285	-.279	-.271
.877	.631	.414	.413	-.437	.506	.404	-.454	-.179	-.240	.094	.565	.458
.668	.604	.294	.442	-.315	.516	.603	-.380	-.275	-.187	.088	.612	.433
-.719	-.596	-.287	-.387	.375	-.509	-.507	.395	.262	.223	-.051	-.593	-.431
-.708	-.536	-.276	-.297	.411	-.467	-.408	.431	.241	.209	-.073	-.521	-.395
-.685	-.580	-.404	-.283	.411	-.499	-.372	.400	.136	.247	-.206	-.520	-.467
-.555	.810	.809	.268	-.752	.485	.188	-.402	-.171	-.692	.167	.601	.440
-.640	-.632	-.523	-.304	.696	-.469	-.143	.556	.087	.427	-.150	-.510	-.455
.436	.794	.851	.173	.810	.439	.079	-.390	-.135	-.775	.168	.550	.405
.378	.218	.085	.054	-.041	.108	.896	.327	-.203	-.043	.240	.225	.035
.666	.577	.452	.350	-.414	.429	.354	-.340	-.115	.309	.156	.513	.402
-.459	-.703	-.680	-.112	.977	-.511	.015	.319	.000	.824	-.092	-.523	-.531
.....	.478	.380	.284	-.439	.405	.310	-.340	-.039	-.268	.075	.388	.466
.....	.....	.552	.331	-.647	.446	.267	.426	.003	-.550	.129	.899	.463
.....	.....	.....	.048	-.666	.281	.060	-.334	-.173	.721	.276	.195	.227
.....	.....	.....	.....	-.088	.443	.128	.048	-.335	.034	.068	.389	.334
.....	.....	.....	.....	.....	-.501	.080	.297	-.026	.777	-.086	-.468	-.530
.....	.....	.....	.....	.....	.....	.069	-.199	-.283	-.266	.325	.411	.933
.....	.....	.....	.....	.....	.....	.....	-.241	-.140	-.023	.204	.299	.019
.....	.....	.....	.....	.....	.....	.....	.....	.176	.155	-.243	-.342	-.141
.....	.....	.....	.....	.....	.....	.....	.....	.....	.059	-.115	.060	.082
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	-.119	-.317	-.255
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.043	.294
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.450
33.56	49.00	12.04	0.81	6.75	11.38	73.79	6.42	13.21	2.92	4.08	37.21	13.21
17.47	19.23	8.12	1.32	3.09	3.58	5.72	4.69	3.45	2.00	1.73	16.42	3.43

12. Percentage of different words not known to go per cent of sixth-grade pupils.

13. Maximum syllabic sentence-length.

14. Minimum syllabic sentence-length.

15. Number of figures of speech.

16. Number of sentences per paragraph.

17. Number of prepositional phrases.

18. Number of different words.

19. Number of third-person pronouns.

20. Number of infinitive phrases.

21. Number of simple sentences.

22. Number of *i* words.

23. Range of syllabic sentence-length.

24. Number of infinitive and prepositional phrases.

method it is possible to select for further use elements that correlate as closely as possible with the criterion—in this instance, the average reading score of 190 readers—and as little as possible with each other. Table XXXI shows the intercorrelation

of the twenty-four elements identified as significant indexes of difficulty for "poorest" readers.<sup>24</sup>

#### SELECTION OF MOST USEFUL ELEMENTS

Several criteria were set up in selecting useful elements for prediction. It was believed that such elements should correlate closely with the average reading score, correlate relatively little among themselves, be readily recognizable, and together give an adequate representation of known indexes of difficulty without including a number too large for convenient use.

Eight elements seem to meet the requirements set up for selection. They are: number of different hard words; number of easy words; percentage of monosyllables; number of first-, second-, and third-person pronouns; average sentence-length in words; percentage of different words; number of prepositional phrases; and number of simple sentences. Examination of Table XXXI justifies the selection of these elements from the point of view of the first two criteria of usefulness.

With respect to the third criterion, one may ask whether different "hard" words, for example, are more readily recognized than words "not known to 90 per cent of sixth-grade pupils." The answer is clearly, "yes." A "hard" word is any word that is not "easy." And easy words, as they are defined in this study, number only 756. They can be memorized, therefore, as they are used. The result is that a reader is soon able to check hard words with surprising rapidity.

Counting the number of words not known to 90 per cent of sixth-grade pupils cannot be done so expeditiously. In the first place, Dale's 8,000-Word List is distributed privately and hence is less accessible than the Easy-Word List. In the second place, no one can hope to remember whether a particular word is known, let us say, by 42 per cent or by 92 per cent of sixth-grade pupils. Every word must be checked against the list in order that its familiarity may be determined. Furthermore, the

<sup>24</sup> In Appendix E, Table LXXXIV, is shown the intercorrelation of the forty-four elements described earlier in the chapter.

list obviously is not exhaustive, and a word may not appear therein. It becomes necessary in such cases to resort to an estimate of familiarity which may or may not be reliable. Number of words not known to 90 per cent of sixth-grade pupils was therefore considered less useful as a measure of hardness than number of hard words.

Preference was given to word-counts as a measure of length of sentence, for the reason that they can usually be made more rapidly and accurately than counts by syllables. One element of difficulty, namely, figures of speech, warrants selection from a statistical point of view, inasmuch as it correlates fairly closely with the criterion of difficulty and relatively little with other elements. However, it has not been selected among elements of greatest usefulness. There seems reason to believe that unless a person is sensitive to figurative style, he probably will err in his count of figures of speech and hence obtain an unreliable measure.

This sorting of elements of difficulty in no way precludes the use of other significant elements, should one prefer to use them. For greatest accuracy, however, elements which measure different aspects of structural expression are most desirable. These are the ones which we have just pointed out.

#### HOW SHALL THE MOST USEFUL ELEMENTS OF DIFFICULTY BE USED IN ESTIMATING DIFFICULTY OF READING MATERIALS?

In view of the fact that each of the eight elements selected in the previous section is related to difficulty, each may be used as an index of the difficulty of material in which it occurs. Furthermore, the occurrence of all or several elements of difficulty may be considered a better index of relative difficulty than any single element. For example, if in counting the number of different hard words in equal sized samplings of two books, *The Epic of America* and *The Good Earth*, let us say, we find, as is actually the case, 28 per cent in the former and 15 per cent in the latter, we have some grounds for thinking that *The Epic of America*

is the more difficult book. If we find also that 67 per cent of the words in the first are different words as against 65 per cent in the second, we have slightly more evidence. If we pursue the analysis still farther and discover in *The Epic of America* an average of 15 prepositional phrases in a sample similar in size to one containing 8 prepositional phrases in *The Good Earth*, there is added reason for ranking the first as more difficult. An average sentence-length of 44 words in the former also indicates greater difficulty than an average length of 29 words in the latter. If we look again at elements which indicate ease and find only 5 personal pronouns in the one and 13 in the other, we have little reason to doubt the relative difficulty of the two books. Although simple sentences, monosyllables, and number of easy words might be included in the analysis, their use is made unnecessary by the agreement among the elements already counted. We already have sufficient evidence to rank *The Epic of America* of greater difficulty than *The Good Earth*, since it contains more different hard words, a larger percentage of different words, fewer personal pronouns, more prepositional phrases, and longer sentences.

The number of elements to be used in estimating difficulty depends upon several factors: the degree of agreement reached by the use of two or three elements, the amount of time necessary in making the estimate, the degree of precision desired, and so on. Although elements do not always vary in the same direction with the consistency of the foregoing illustration, simplicity or complexity of expression tends to be more or less general for any particular book. All the eight elements which we have designated as most useful seldom modify materially the estimate of difficulty that can be made by four or five of their number. Proof of this statement will be shown later.

In estimating the relative difficulty of magazines, newspapers, and books, as reported in the next chapter, four elements have been used: number of monosyllables, percentage of different words, average sentence-length in syllables, and number of simple sentences. In some cases additional elements have been

counted for the purpose of comparing the classification of materials by few or many elements of difficulty. These are: number of different hard words, percentage of easy words, number of prepositional phrases, and number of personal pronouns. Agreement among three analyses has been generally found to be reliable.

One of the chief merits of the method just described probably lies in its objectivity. Its use obviates the haphazard designation of a particular book, magazine, or newspaper as relatively easy or difficult on the basis of personal opinion. A second merit lies in its reliability, which was discovered by correlating the absolute difficulty of a series of selections expressed in terms of test scores with the relative difficulty of the same selection indicated by rankings on the test. For fiction, a rank correlation of  $.535 \pm .103$  was obtained; for non-fiction,  $.663 \pm .081$ . Ranking of materials for difficulty by this method is therefore fairly reliable.

Two major limitations attend the ranking of materials according to the number of elements of structural difficulty. To return to our previous illustration. Let us suppose that after ranking *The Epic of America* as more difficult than *The Good Earth* we are asked to isolate one or the other and to define its difficulty precisely. We discover, then, that although we know how many different hard words the book contains, what percentage of the words are different, how many personal pronouns it averages per hundred words, and the number or percentage of several other elements, this is all we do know. Rather, this is all, except that the book is more or less difficult than another book which we have used as a basis of comparison. Some other technique must be introduced in order to define the difficulty of *The Epic of America*, *The Good Earth*, or any book in terms of an accepted criterion of difficulty. Such a technique is described in the next section.

By the method just presented, we assume that all of the various elements by which we estimate difficulty have equal weights. For example, a high percentage of different hard words



and a long average sentence are considered equal contributors to difficulty. In reality, such is not the case, since no group of variables in a realm of concomitants acts in this manner. Hence, the estimate is somewhat less exact than if each element were assigned its proper weight, as is done by the method described in the following paragraphs.

#### PREDICTING DIFFICULTY IN TERMS OF AN AVERAGE READING SCORE

Since all elements of difficulty must serve in some way to determine the difficulty of a selection in which they occur, it seems probable that a combination of the most useful elements into a single instrument of prediction will give the best possible estimate of difficulty. That instrument is a statistical device known as a "regression equation," which expresses the relation between a single dependent variable,  $X_1$ , and a number of independent variables,  $X_2, X_3, X_4 \dots X_n$ . In this case,  $X_1$  is the criterion of difficulty which we are trying to predict. That is, it is the average reading score which a group of readers of limited ability will probably make when tested on a selection.  $X_2 \dots X_n$  are the elements of difficulty combined to predict  $X_1$ . The regression equation which may be used to predict  $X_1$  is:<sup>25</sup>

$$X_1 = -.06566X_2 + .001268X_3 + .004064X_4 + \\ .007545X_5 - .02342X_6 - .03371X_7 - \\ .01455X_8 - .01015X_9 + 3.408 \pm .2941.$$

The meanings of the terms are as follows:

$X_1$  = the average reading score which will probably be made by a group of adults of limited reading ability on a given passage of general reading material.

$X_2$  = the number of different hard words found in a passage of the size used in the reading tests, i.e., about 100 words in length.

$X_3$  = the number of easy words found in a passage of 100 words.

$X_4$  = the percentage of polysyllables found in the passage.

<sup>25</sup> The general equation form for  $n$  variables is:

$$X_1 = b_{12.34 \dots n}X_2 + b_{13.24 \dots n}X_3 + b_{1n.23 \dots (n-1)}X_n + C.$$

$X_5$  = the number of first-, second-, and third-person pronouns occurring in the passage.

$X_6$  = the average sentence-length in words used in the passage.

$X_7$  = the percentage of different words used in the passage.

$X_8$  = the number of prepositional phrases found in the passage.

$X_9$  = the number of simple sentences used in the passage.

$-.006566$ ,  $+.001268$ , etc., = regression coefficients which give the weight or value to be attached to each independent variable.

$3.408$  = a statistical constant.

$.2941$  = the probable error of prediction.

The average reading score which will probably be made by the group, when predicted by this equation, has a probable error of  $.294$ . This means the chances are about even that the predicted score will not differ from the actual score which would be obtained by testing more than  $\pm .294$ .

To illustrate the use of this equation in predicting the average reading score of a selection, take, for example, the adapted version of *Robinson Crusoe*. Samplings of this book contain on the average 11 different hard words, 70 easy words, 72 per cent of monosyllables, 16 personal pronouns, an average sentence-length of 12.04 words, 36.5 per cent of different words, 7 prepositional phrases, and 4 simple sentences. The most probable average score that readers of limited ability would make if they were tested for comprehension of the book is obtained in the following manner:

$$\begin{aligned} X_1 = & -( .006566 \times 11 ) + ( .001268 \times 70 ) + ( .004064 \times 72 ) \\ & + ( .007545 \times 13 ) - ( .02342 \times 12.04 ) - ( .03371 \times 36.5 ) \\ & - ( .01455 \times 7 ) - ( .01015 \times 4 ) + 3.408 = 2.1 . \end{aligned}$$

This average score of 2.1 indicates that readers of limited ability will probably find the adapted *Robinson Crusoe* as easy to read as any item used in the adult reading tests, since the easiest item had an average score of 2.1 for "poorest" readers. An examination of all individual scores indicates that 58.6 per cent of the "poorest" readers showed a fair comprehension of the selections by a score of 2 or better. A close relationship exists between the percentage who can be expected to comprehend the selection and the average comprehension score which

the group can be expected to make when tested on the selection. This has been shown by a correlation of .898. It seems probable, therefore, that most adults of limited reading ability can understand a selection with an index of difficulty of 2.1. What this index means in terms of grade-levels will be shown in a later chapter.

#### RELIABILITY OF PREDICTION

How well do the eight elements predict the difficulty of general reading material? How much better than mere chance is prediction by the technique described in the foregoing sections? In other words, is prediction by the use of eight elements reliable? These questions may be answered in either of two ways. According to the one, we may simply state that the eight elements predict difficulty fairly well and that their use gives an estimate considerably better than mere chance. For the general reader of this report, such an answer is probably satisfactory. He can be content "to take our word" as truth and pass over the remainder of this section. There we answer the questions in a less general way. Such an answer is intended for the more analytical reader—the student of research—who wants statistical proof that a proposed technique is reliable.

Precision of prediction depends partly on the size of the correlation between the right and left sides of the equation, that is, on the correlation between the actual and the predicted difficulty of a selection. This relationship is expressed in terms of a multiple-correlation coefficient, designated  $R$ . For the equation given on page 134,  $R$  has a value of .645.<sup>26</sup> It is evident that the combination of eight elements yields a higher correlation with difficulty than any of the elements taken alone. The correlation of the single elements with difficulty has been shown in Table XXVII.

From  $R$ , .645, it is possible to measure the relationship be-

<sup>26</sup> The formula for obtaining  $R$  is:  $R_{1(23 \dots n)} = \sqrt{\frac{1 - 1.23 \dots n}{\sigma^2}}$ .

(Holzinger, *op. cit.*, Formula 155, p. 307.)

tween prediction by the regression equation and a pure guess.<sup>27</sup> This relation was found to be .764, which means that the estimate of difficulty based on the occurrence of eight elements will be in error on the average by about .76 as much as if the errors resulted from pure guesses. Or subtracting .76 from 1.00, the errors will be .24 smaller than those in pure guesses.

Precision of prediction depends also on the size of the probable error of estimate, commonly designated  $P.E._{(est. X_1)}$ . For the equation developed in this section the value of the probable error of estimate is .29.<sup>28</sup> This means that the chances are about even that the actual difficulty of a selection will not vary from the predicted difficulty more than  $\pm .29$ . If the predicted difficulty of a given book is represented by an average score of 2.1, the chances are 50 in 100 that the actual difficulty will lie somewhere between 1.81 and 2.39. Although the relationship between prediction and actuality is considerably lower than an approximation of certainty, it is higher than other investigators have obtained in predicting difficulty of other types of material. It is unquestionably high enough to be of practical value in estimating difficulty of materials for adults of limited reading ability.

#### PREDICTING DIFFICULTY BY A SMALLER NUMBER OF ELEMENTS

In view of the amount of labor involved in counting the occurrence of eight elements in a selection, we made an effort to discover whether combinations of fewer elements would give a prediction approximately as good. One who is accustomed to deal with statistical data will see at once that low weights are attached to three of the variables in the equation—number of easy words, percentage of monosyllables, and number of simple

<sup>27</sup> The coefficient of alienation is calculated:

$$K = \sqrt{1 - r^2}.$$

Truman L. Kelley, *Statistical Method*. (New York: Macmillan Co., 1923), p. 173.

<sup>28</sup> The formula for the probable error of estimate is:  $P.E._{(est.)} = .6745 \sigma_{1.23} \dots n$ . (Holzinger, *op. cit.*, Formula 84, p. 211.)

sentences. Apparently these variables do not make for greater predictive accuracy. When they are omitted from calculation the new equation becomes:

$$X_1 = -.01029X_2 + .009012X_5 - .02094X_6 - .03313X_7 \\ - .01485X_8 + 3.774,$$

in which the subscripts of  $X$  designate the same elements as in the longer equation.  $X_2$  designates number of different hard words;  $X_5$ , number of first-, second-, and third-person pronouns;  $X_6$ , average sentence-length in words;  $X_7$ , percentage of different words; and  $X_8$ , number of prepositional phrases. Quite as reliable results may be obtained by combining these elements as by combining with them the three omitted from the earlier equation. The statistical proof for this statement lies in the following measures:

$$R = .6435 \pm .085 \\ \text{P.E. (est. } X_1) = .294$$

Multiple  $r$ , .6435, is almost identical with .6446 obtained for the longer equation. The probable errors of estimate vary from .2945 to .2941 for the two equations. This variation is clearly insignificant.

By arranging the eight most useful elements into various combinations of four, it has been found that nine different combinations will each give an estimate of difficulty about as good as that obtained by the use of more elements. Equations for these combinations are shown in Table XXXII. The symbols have the same meaning as in the first equation on page 134. Although a slightly better estimate of difficulty can be secured from the use of one team of variables than another, there seems to be no special advantage in giving preference to any particular one, except on the ground of ease of counting. The formula used in the chapters which follow is for variables 1.25678.

In order that estimates by the regression equation shall be reliable, certain cautions need to be observed. Data to which the regression equation is applied must be comparable with those of the sample from which the equation was derived. In

other words, they must be obtained from general reading materials of the sort used in the tests described in chapter iii. Samples of the material should be approximately the same length as the test items—about 100 words. In predicting the difficulty of long selections, several hundred-word passages may be selected and examined for the presence of the elements of prediction. An average of the occurrence of these elements in

TABLE XXXII

INSTRUMENTS OF PREDICTION, COMBINING FOUR ELEMENTS OF DIFFICULTY\*

Vari- ables	Formula	R	P.E. (est. $X_1$ )
1.2678..	$X_1 = -.01229X_2 - .02448X_6 - .03245X_7 - .01623X_8 + 3.952$	.6402	.2956
1.2567..	$X_1 = -.01333X_2 + .01007X_5 - .02224X_6 - .03054X_7 + 3.532$	.6393	.2958
1.3678..	$X_1 = .009709X_3 - .02510X_6 - .03410X_7 - .01882X_8 + 2.965$	.6387	.2960
1.4678..	$X_1 = .01279X_4 - .02405X_6 - .03866X_7 - .01962X_8 + 3.156$	.6385	.2961
1.2467..	$X_1 = -.01156X_2 + .006938X_4 - .02552X_6 - .03055X_7 + 3.153$	.6368	.2967
1.2679..	$X_1 = -.01540X_2 - .02924X_6 - .02999X_7 - .01188X_8 + 3.816$	.6355	.2970
1.4567..	$X_1 = .01350X_4 + .01057X_5 - .02247X_6 - .03758X_7 + 2.682$	.6347	.2973
1.3467..	$X_1 = .007945X_3 + .009218X_4 - .02622X_6 - .03245X_7 + 2.160$	.6345	.2974
1.3567..	$X_1 = .01027X_3 + .008694X_5 - .02437X_6 - .03298X_7 + 2.535$	.6340	.2975

\*  $X_1$  = average reading score. $X_2$  = number of different hard words in a passage of 100 words. $X_3$  = number of easy words. $X_4$  = percentage of monosyllables. $X_5$  = number of personal pronouns. $X_6$  = average sentence-length in words. $X_7$  = percentage of different words. $X_8$  = number of prepositional phrases. $X_9$  = number of simple sentences.

the selected passages should then be substituted in the regression equation. Finally, the estimated score must be interpreted as the difficulty which adults of limited reading ability probably will experience in reading.

## VERIFYING THE PREDICTED SCORES

Is a formula derived from the scores of one population a valid means of predicting scores for a second population? The procedure followed in answering this question was, first, to obtain measures of reading ability of a second population by use of the Adult Reading Test, and then to correlate the scores with the

predicted scores based on the performance of the first population.

One hundred and thirty-six adults in evening classes and in an industrial reformatory were tested. Of this number, 102 had scores that fell within the limits which identified "poorest" readers, that is, between 68.63 and  $-15.05$ . The scores obtained by these readers were then correlated with those predicted by use of the regression equation based on the scores of 190 "poorest" readers. A coefficient of  $.720 \pm .075$  indicates that the regression equation is valid for use in a second population of which the experimental population may be taken as an adequate sample.

#### SAMPLING OF BOOKS

The statement has already been made that the elements used in the regression equation should be counted in passages approximately one hundred words in length; also that the counts obtained from several such passages in a long selection should be averaged to obtain the typical occurrence of particular elements in the entire selection. In interpreting the average of several passages as characteristic of the larger selection, we are faced with questions concerning the adequacy and the representativeness of the sampling.

The question of adequacy of the sampling relates to the number of hundred-word passages to analyze in a given selection. The question of representativeness pertains to the distribution of the samplings, so that they will represent fairly well all portions of the selection. The procedure commonly recommended to research workers is to exercise best judgment and expert knowledge of the situation in choosing what shall constitute a reliable sample and to select the samples in a way that appears to be fairly representative. For all practical purposes, a sample paragraph of approximately one hundred words from each chapter seems adequate. If examination of a book indicates that chapter divisions are more a convenience of format than a logical division of thought, then one passage may be taken as representative of several chapters.

Some evidence of the representativeness of the hundred-word sampling of each chapter is shown in Table XXXIII. The data present the average occurrence of the five elements of difficulty in two hundred-word passages from each of twenty chapters in *Everyday Problems of the Everyday Child*. Differences in the mean occurrence of each element in the two passages are not statistically significant. For this book, then, one sampling is as

TABLE XXXIII

AVERAGE OCCURRENCE OF FIVE ELEMENTS IN TWO SAMPLINGS OF TWENTY PASSAGES EACH FROM ONE BOOK

ELEMENT*	FIRST SAMPLING OF TWENTY PASSAGES		SECOND SAMPLING OF TWENTY PASSAGES		DIFFERENCE BETWEEN MEANS
	Average	S.D.	Average	S.D.	
2.....	29.60 ± .6819	4.521	29.00 ± .7401	4.907	.60 ± 1.011
5.....	4.65 ± .3324	2.204	5.05 ± .5342	3.542	.40 ± .6291
6.....	30.72 ± 1.590	10.54	28.53 ± 1.490	9.868	1.19 ± 2.179
7.....	70.32 ± .6771	4.489	68.34 ± .6888	4.567	1.98 ± .9648
8.....	11.65 ± .4110	2.725	12.45 ± .5591	3.707	.80 ± .6939

\* Elements:

2. Number of different hard words.
5. Number of first-, second-, and third-person pronouns.
6. Average sentence-length in words.
7. Percentage of different words.
8. Number of prepositional phrases.

representative of structural elements in a chapter as two samplings. While a larger number of passages would probably give a more precise sampling of the entire content, it is scarcely practical to use them in view of the time required to analyze each.

#### SUMMARY

The chapter has presented partial answers to two questions. The first is, What elements of difficulty are inherent in adult reading materials of a general nature? The second is, How can these elements be used in a more accurate estimate of the difficulty of general materials for adults of limited reading ability?

In answering the first question, elements of difficulty have



been defined for adult readers in general, for "best" readers, and for "poorest" readers. The facts show that while an element of difficulty tends to be general, the extent of its influence tends to vary with specific classes of readers. The size of the coefficients and direction of their deviation indicates that as reading ability reaches a higher level of efficiency, difficulty of comprehension, due to variations in the author's expression, tends to grow less. Although the present chapter has gone no farther than to define good and poor readers in terms of their average performance on the Adult Reading Test, it seems reasonable to assume that directors and advisers of adult groups can estimate with considerable accuracy the class in which particular individuals belong.

In answer to the second question, two methods of estimating difficulty have been presented. The first involves a comparative count of significant elements of difficulty occurring in different reading materials. It is a simple and fairly reliable means of judging the relative difficulty of books, magazines, and newspapers. The second supplies a more specific and somewhat more reliable method of predicting difficulty in terms of the average reading score. The data presented show that a regression equation involving eight elements makes for accuracy of prediction little better than that obtained by combinations of fewer elements. Although techniques developed in this study do not yield highly accurate estimates of difficulty, predictions based upon a reliability of .64 will be fairly satisfactory for general prediction and unquestionably more effective than sheer chance.

Succeeding chapters illustrate how the findings presented here may be put to practical use by librarians and others. Sometimes they are used to estimate in an objective and reasonably reliable manner the relative difficulty of general magazines and newspapers. Again, they serve as a means of predicting absolute difficulty in terms of an average reading score.

## CHAPTER V

### HOW DO ADULT READING MATERIALS DIFFER WITH RESPECT TO ELEMENTS OF DIFFICULTY?

IT IS not within the scope of this report to analyze any large amount of adult reading material. It seems essential, however, to examine a considerable sampling of several kinds for the purpose of answering such questions as: How do materials differ with respect to significant elements of difficulty? What materials can be designated relatively easy or difficult on the basis of one or more elements of difficulty inherent in them?

In answering these questions, we have analyzed representative magazines, books, and newspapers to discover the occurrence of elements that characterize them as relatively easy or difficult. Four elements which correlate significantly with difficulty have been used: percentage of monosyllables; percentage of different words, or vocabulary diversity; length of sentence in syllables; and number of simple sentences. Any conclusions concerning relative difficulty are limited to these elements.

#### WHAT MATERIALS TO STUDY

One of the most perplexing problems connected with a study of reading matter is the selection of materials that may claim to be representative of what is written for adults and presumably read by them. If at least half the adult public reads magazines, newspapers, and books, then these three sources of material may be thought of as generally representative of what adults read. But they suggest only a broad classification. They lack particularity. Obviously, a book is not just a book. Nor is a magazine just a magazine. Each has some mark of individuality, despite the notable standardization of content, style, and format that prevails among certain classes of newspapers, popu-

lar magazines, and best-sellers. Selecting materials from the three sources, then, involves, first, defining arbitrary criteria of selection, then examining and sorting materials in the light of these criteria, and, finally, assembling those which seem to meet the criteria most satisfactorily.

#### THE MAGAZINES STUDIED

In order to keep the list of magazines within manageable proportions, we have limited the study to an analysis of those which are classified as "General" in the *Directory of Newspapers and Periodicals*.<sup>1</sup> They contain a wide variety of articles intended to meet the needs of a heterogeneous public. Classifications addressed to specialized groups of readers are therefore omitted. General magazines are further restricted to those whose circulation figures equal or exceed 125,000, as sworn to by the Audit Bureau of Circulation. If the circulation figures are a publisher's claim, unsupported by affidavit or detailed statement, or are merely estimates of another sort, the magazine is excluded.

According to Ayer, circulation means "the average number of complete copies of all regular issues for a given period, exclusive of left-over, returned, file, sample, exchange, or advertisers' copies, and special editions."<sup>2</sup> A list of magazines based on circulation figures, therefore, indicates the best-selling magazines and may be accepted as indicative of the preferences of magazine purchasers. But since circulation is conditioned by supply, which in any given community may be affected by the adequacy of facilities characterizing its newsstands and by other external influences, preference for magazines, as determined by the number purchased, obviously may fall short of representing the true number actually read.

The sixty-eight general magazines which comprise the list cannot be said to be representative of the general reading of adults except in so far as they presumably represent in every

<sup>1</sup> N. W. Ayer & Sons, *Directory of Newspapers and Periodicals for 1931* (Philadelphia: N. W. Ayer & Sons, 1931), pp. 1250-55, 1256-59.

<sup>2</sup> *Ibid.*, p. 8.

TABLE XXXIV

NAMES AND DATES OF ISSUE OF MAGAZINES USED IN THE ANALYSIS  
AND THE ANNUAL CIRCULATION OF EACH

Name of Magazine	Issue	Circulation
Ace-High Magazine.....	March, 1931	159,820
Aces (Fiction House Group).....	March, 1931	813,413
All-Star Detective Stories.....	March, 1931	306,511
All-Story.....	March 21, 1931	479,576
American Home.....	February, 1931	250,175
American Magazine, The.....	February, 1931	2,279,108
Atlantic Monthly, The.....	February, 1931	129,798
Better Homes and Gardens.....	February, 1931	1,390,660
Blue Book Magazine, The.....	March, 1931	175,701
Capper's Farmer.....	January, 1931	927,444
Clues.....	April, 1931	211,434
College Humor.....	February, 1931	240,975
Collier's Magazine.....	February 7, 1931	2,257,290
Country Gentleman.....	February, 1931	1,701,399
Delineator.....	February, 1931	2,002,672
Detective Story Magazine.....	March 28, 1931	1,147,580
Dream World.....	April, 1931	219,749
Farmer's Wife.....	February, 1931	939,955
Field and Stream.....	April, 1931	134,092
Gentlewoman.....	December, 1930	1,158,294
Golden Book.....	January, 1931	136,584
Good Housekeeping.....	February, 1931	1,767,380
Hearst's International Cosmopolitan Magazine.....	February, 1931	1,590,840
Holiday.....	March, 1931	153,336
Holland's Magazine.....	April, 1931	414,111
House and Garden.....	March, 1931	125,818
Household Magazine.....	February, 1931	1,777,088
Judge.....	February 21, 1931	171,898
Ladies' Home Journal, The.....	February, 1931	2,581,942
Liberty.....	February 7, 1931	2,415,942
Literary Digest.....	February 14, 1931	1,602,397
McCall's Magazine.....	January, 1931	2,505,088
Mother's Home Life.....	February, 1931	723,669
Motion Picture Classic.....	March, 1931	159,690
Motion Picture Magazine.....	April, 1931	387,396
Nation's Business.....	March, 1931	312,976
National Farm Journal.....	December, 1930	1,517,446

TABLE XXXIV—*Continued*

Name of Magazine	Issue	Circulation
National Geographic Magazine.....	February, 1931	1,291,082
Needlecraft.....	February, 1931	1,023,159
New Movie Magazine.....	February, 1931	1,297,948
Outdoor Life.....	April, 1931	125,453
Pathfinder.....	February 14, 1931	998,948
People's Popular Monthly.....	February, 1931	1,337,278
Photoplay Magazine.....	March, 1931	620,331
Pictorial Review.....	March, 1931	2,502,214
Picture Play.....	April, 1931	205,959
Popular Mechanics.....	March, 1931	514,810
Popular Science Monthly.....	April, 1931	361,059
Radio News.....	March, 1931	151,421
Ranch Romances.....	April, 1931	211,434
Red Book Magazine.....	February, 1931	638,282
Review of Reviews.....	February, 1931	160,005
Rotarian.....	March, 1931	138,036
Saturday Evening Post.....	February 21, 1931	2,924,363
Science and Invention.....	April, 1931	148,436
Screen Book Magazine.....	April, 1931	260,203
Screenland.....	April, 1931	185,342
Short Stories.....	April, 1931	130,099
Sky Riders.....	April, 1931	176,180
Successful Farming.....	December, 1930	1,157,811
Time.....	February 16, 1931	500,172
True Detective Mysteries.....	February, 1931	486,137
True Romances.....	March, 1931	601,951
True Story Magazine.....	February, 1931	2,110,383
Vogue.....	March, 1931	133,931
Woman's Home Companion.....	January, 1931	2,606,123
Woman's World.....	March, 1931	1,225,734
World's Work.....	March, 1931	127,774

case the magazine reading of 125,000 readers or more. A list of these magazines, with the dates of publication used, together with circulation figures for 1931, appears in Table XXXIV.<sup>3</sup>

#### THE NEWSPAPERS STUDIED

The *Directory of Newspapers and Periodicals for 1933* reports that 2,053 daily newspapers were published in the United States

<sup>3</sup> *Ibid.*, pp. 1203-11, 1212-18, 1250-55, 1256-59.

and outlying territories in 1932. In the same year there were 10,760 weekly publications, of which some 9,000 were largely newspapers of village and rural communities. The remainder were trade publications of various kinds. Similar facts have been compiled for the past several years, making it apparent that if we are to study newspapers which represent what 95 per cent of our population are reading, we should include daily and weekly newspapers of city, village, and rural circulation. Furthermore, the introduction of the graphic element into newspapers, for the purpose of featuring news which even the illiterate can understand, in a measure suggests the need of including graphics or tabloids in the study.

In general, the ten daily papers studied are those having the widest circulation among either morning or evening editions. Three of these are graphics. Village newspapers represent weekly publications of towns in the Middle West having a population ranging between 400 and 6,000. Rural publications are represented by *Capper's Weekly*. A total of fifteen newspapers comprise the list shown in Table XXXV.

#### BOOKS ANALYZED FOR RELATIVE DIFFICULTY

Inasmuch as the study has been restricted to an investigation of elements of difficulty in adult reading material of a general nature, only books of a general character are included. Books on technical and vocational subjects, books that are encyclopedic or analytical in content, and books adapted to particularly uncatholic tastes have not been included in the list. Those which seem appropriately designated "general" are popular novels, popular books of non-fiction, standard fiction, the Bible, and certain miscellaneous types to be described later. Table XXXVI lists the twenty-nine books which are ranked for relative difficulty in this chapter. Restrictions instituted in the preparation of this list are admittedly arbitrary.

By popular novels and popular general books we mean those that are currently popular, that is, books which have dominated public interest since January, 1929. Authority for popularity

was found in demands at libraries and bookshops, as they were reported in monthly book-lists in the *Bookman* and booksellers' reports in *Publishers' Weekly* during the period from January, 1929, until June, 1931.

Inasmuch as standard books differ from popular books in style and theme, it may be assumed that they differ also in the occurrence of elements which mark a book easy or hard. Some

TABLE XXXV

NAMES OF FIFTEEN NEWSPAPERS SELECTED FOR ANALYSIS, WITH CLASSIFICATION AND DATE OF ISSUE OF EACH

Classification	Newspaper	Issue
Metropolitan.....	{ Boston Post	August 8, 1931
	{ Chicago American	August 10, 1931
	{ Chicago Daily Times (picture newspaper)	August 10, 1931
	{ Chicago Daily Tribune	August 11, 1931
	{ Christian Science Monitor	August 8, 1931
	{ New York Evening Graphic	August 7, 1931
	{ New York Journal	August 8, 1931
	{ New York News (picture newspaper)	August 9, 1931
	{ Los Angeles Times	August 6, 1931
Village.....	{ Philadelphia Evening Bulletin	August 8, 1931
	{ Edmore Herald News (North Dakota)	August 13, 1931
	{ Jefferson Banner (Wisconsin)	August 13, 1931
	{ Olney Daily Mail (Illinois)	June 27, 1931
Rural Digest.....	{ Riceville Recorder (Iowa)	August 5, 1931
	{ Capper's Weekly (Kansas)	February 7, 1931

support for this assumption is found in Scudder's comparative study of length of sentences used by five nineteenth-century and five contemporary writers.<sup>4</sup> His findings show that, with the exception of Edith Wharton, all modern writers use shorter sentences than did novelists of earlier periods. Hawthorne's sentences, for example, average 36.42 words, as against sentences with an average of 18.75 words used by Willa Cather.

That the so-called "classics" seem to present no greater diffi-

<sup>4</sup> Harold H. Scudder, "Sentence Length," *English Journal*, XII (November, 1923), 617-20.

TABLE XXXVI

NAMES OF TWENTY-NINE BOOKS SELECTED FOR ANALYSIS,  
WITH CLASSIFICATION AND AUTHOR OF EACH

Classification	Book	Author
Popular novels. . . . .	{ All Quiet on the Western Front Angel Pavement Cimarron Peder Victorious Roper's Row Scarlet Sister Mary White Oaks of Jalna	Erich Maria Remarque J. B. Priestley Edna Ferber O. E. Rolvaag Warwick Deeping Julia Peterkin Mazo de la Roche
Popular general books. .	{ Art of Thinking, The Byron Elizabeth and Essex Henry the Eighth Preface to Morals, A Story of San Michele, The Tragic Era, The	Ernest Dimnet André Maurois Lytton Strachey Francis Hackett Walter Lippmann Axel Munthe Claude G. Bowers
"Best" standard books. .	{ Adventures of Huckleberry Finn, The Last of the Mohicans, The Scarlet Letter, The Tales	Mark Twain James Fenimore Cooper Nathaniel Hawthorne Edgar Allan Poe
Classics, original form. .	{ Moby Dick Robinson Crusoe Silas Marner	Herbert Melville Daniel Defoe George Eliot
Classics, adapted form. .	{ Moby Dick Robinson Crusoe Silas Marner	Sylvia Chatfield Bates Michael West Ettie Lee
Adaptation in basic English. . . . .	Carl and Anna	Frank Leonhard
School readers for middle grades. . . . .	{ Reading and Living, Book I Reading and Living, Book II Reading and Living, Book III  Bible	Hill, Lyman, and Moore Hill, Lyman, and Moore Hill, Lyman, and Moore  King James Version



culty from the standpoint of vocabulary than popular modern novels is shown by Witty and LaBrant.<sup>5</sup> They conclude from their analysis that other elements than vocabulary must determine differences in difficulty, if such differences actually exist. The standard books listed in Table XXXVI represent practical unanimity of judgment among 400 professors of literature concerning "the ten works by American writers that best represent our bid for a permanent place among the masterpieces of the world's literature."<sup>6</sup>

Two versions of other standard books or classics are listed in Table XXXVI. These are included for the purpose of ascertaining how much simplification has been accomplished by adapting the original books to low-reading levels and, if possible, what method of simplification has been used.

The inclusion of a series of school readers for the middle grades is based on the assumption that their content has characteristics similar to adult books, since reading instruction in the middle grades continues "until habits of rapid, silent reading approach maturity."<sup>7</sup> The series studied was selected at random from texts published since 1929.

#### THE PROCEDURE FOLLOWED IN ESTIMATING RELATIVE DIFFICULTY

The method used in estimating the relative difficulty of general books, magazines, and newspapers has been described in chapter iv. It involves the following: (1) analyzing the material for the occurrence of four significant elements of difficulty, namely, percentage of monosyllables, percentage of different words, average length of sentences in syllables, and percentage of simple sentences; (2) comparing the occurrence of these elements in the three classes of material taken as a whole; (3) com-

<sup>5</sup> Paul A. Witty and Lou L. LaBrant, "Vocabulary and Reading," *School and Society*, XXXI (February 22, 1930), 268-72.

<sup>6</sup> H. W. L., "Million Books and Best Books," *Golden Book*, VIII (August, 1926), 382-83.

<sup>7</sup> *Twenty-fourth Year Book of the National Society for the Study of Education* (Bloomington, Illinois: Public School Publishing Co., 1925), Part I, pp. 55-56.

paring the occurrence of the elements in materials within each class; and (4) ranking materials within each class for relative difficulty as defined by each element and by all elements.

#### TREATMENT OF FINDINGS

Striking similarities and differences were found in the analysis of magazines, newspapers, and books. We have attempted to show these findings in three ways. The first involves statistical summaries of the number and proportionate occurrence of the various elements in the different classes of material. The second utilizes a combined statistical and graphical presentation of the mean occurrence of each element in particular magazines, newspapers, and books. And the third gives a classification of all materials in each class according to their relative difficulty as indicated by the percentage of monosyllables, percentage of different words, length of sentence, and number of simple sentences.

The first of these methods of treatment summarizes the findings in a manner that shows dominant tendencies among different types of material and makes possible certain generalizations concerning each. The second method is more detailed. It shows similarities and differences among individual magazines, newspapers, and books with respect to particular elements studied. By isolating specific facts, it provides a means by which materials can be ranked for difficulty. The third method of treatment presents a classification of reading materials from the easiest to the most difficult, thereby defining the area of difficulty represented by each.

#### MONOSYLLABLES IN ADULT READING MATERIALS

Table XXXVII summarizes the data obtained from an analysis of monosyllables in general magazines, newspapers, and books. In all materials there is a predominance of one-syllable words. The highest percentages are, respectively, 75.8 in magazines, 70.6 in newspapers, and 83.3 in books; whereas the lowest percentages are, respectively, 61.5, 61.3, and 61.9.

Some qualification should be made in interpreting the data pertaining to books, for the reason that simplified books are included in this class and therefore contribute to the statistical summaries presented in the table. When simplified books are excluded, the percentage of monosyllables is reduced from a range between 83.3 and 61.9 per cent to a range between 77.6 and 61.9 per cent. The latter is not distinctly different from the range of monosyllables found in general magazines.

TABLE XXXVII

SUMMARY OF DATA OBTAINED FROM AN ANALYSIS OF MONOSYLLABLES  
IN THE READING MATERIAL OF MAGAZINES,  
NEWSPAPERS, AND BOOKS

	General Magazines	Newspapers	Books
Range.....	75.8 — 61.5	70.6 — 61.3	83.3 — 61.9
Mean.....	69.2 ± .28	64.3 ± .47	73.4 ± .55
Standard deviation.....	3.37 ± .20	2.68 ± .33	4.42 ± .39
Median.....	69.2	64.3	73.2
Third quartile.....	71.4	65.4	75.9
First quartile.....	67.5	62.0	69.5
Quartile range.....	3.9	3.4	6.4
Quartile deviation.....	1.9	1.7	3.2

The closest agreement in percentage of monosyllables occurs among newspapers. A difference of 9.3 per cent has been found between the newspaper with highest percentage of monosyllables, 70.6, and the one with the lowest percentage, 61.3. Such consistency can probably be explained by the fact that several newspapers of approximately the same date of issue tend to present much news that is identical. Further evidence of this agreement is shown by the relatively low quartile deviation and standard deviation.

A simple way to calculate the extent of variation among reading materials with respect to the occurrence of monosyllables is to apply the standard deviation to the mean. It is then evident that approximately the middle two-thirds of all the material

studied in general magazines contains between 72.6 per cent ( $69.2+3.37$ ) and 65.8 per cent ( $69.2-3.37$ ) of monosyllables; in newspapers, between 67.0 and 61.6 per cent; and in books, between 77.8 and 69.0 per cent.

Other facts regarding word-length may be obtained from the medians and quartiles shown in Table XXXVII. These measures lead to the observation that in the middle half of all magazines studied, the percentage of monosyllables varies from 71.1 ( $69.2+1.9$ ) to 67.3 ( $69.2-1.9$ ). In three-fourths of them, the percentage of monosyllables exceeds 67.5 (2).

Conclusions of a similar sort may be drawn with respect to other types of material. It is clear that all classes of material when taken as a whole contain a high percentage of monosyllabic words. Newspapers, however, consistently contain longer words than general magazines and books.

#### DIVERSITY OF VOCABULARY IN ADULT READING MATERIALS

Table XXXVIII presents a summary of data obtained from an analysis of materials for percentage of different words. A comparison of statistical measures for the three types of material reveals the following facts: The highest percentage of different words in a thousand, 55.9, is found in general magazines; the lowest percentage, 25.5, in books. The exclusion of adapted classics would still give books the lowest percentage. When the three classes of material are compared in terms of the mean percentage of different words occurring in all material of a class, it may be noted that books contain the lowest and newspapers the highest percentage. These findings are to be expected. For although both classes of material aim to make a universal appeal, the former does so by presenting a single theme of interest, whereas the latter utilizes a range of themes theoretically as wide as the whole scale of human interest.

The range of different words is closest among newspapers. A difference of only 7 per cent may be noted between the newspaper containing the largest number of different words and the

newspaper containing the smallest. The general consistency in percentage of different words for all classes of material agrees with that found in percentage of monosyllables. As in the previous instance, the degree of spread is shown by quartile and standard deviations, which are smallest for newspapers and largest for books.

In material of books, the range extends from 50.6 per cent of different words to 25.5 per cent when simplified books are included, or to 36.1 per cent when they are excluded. In either

TABLE XXXVIII

SUMMARY OF DATA OBTAINED FROM AN ANALYSIS OF PERCENTAGE OF  
DIFFERENT WORDS IN THE READING MATERIAL OF  
MAGAZINES, NEWSPAPERS, AND BOOKS

	General Magazines	Newspapers	Books
Range.....	55.9 — 44.0	53.2 — 46.2	50.6 — 25.5
Mean.....	50.5 ± .19	50.9 ± .31	42.5 ± .69
Standard deviation.....	2.41 ± .13	1.77 ± .22	5.58 ± .49
Median.....	50.5	51.3	44.4
Third quartile.....	52.1	52.2	46.5
First quartile.....	49.2	50.3	39.2
Quartile range.....	2.9	1.9	7.3
Quartile deviation.....	1.4	1.0	3.6

case, the range is several per cent wider than for other types of material. The highest percentage of different words found in any book is lower than in newspapers and general magazines. We are led to conclude, therefore, that the books studied not only contain a smaller percentage of different words than other classes of material but they vary more widely in extent of vocabulary. This conclusion is supported by other facts in the table. For example, when we apply each standard deviation to its respective mean, we find that in the middle two-thirds of the general magazines studied, different words per thousand range from 52.91 to 48.09 per cent; in newspapers, from 52.67 to 49.13 per cent; while in books the percentage of range for a proportionate number of materials is between 48.08 and 36.92 per cent.

LENGTH OF SENTENCES IN ADULT  
READING MATERIALS

In analyzing the length of sentences sampled from magazines, newspapers, and books, we have expressed length in syllables rather than in words, for the measure had been used previously in analyzing a part of the materials in an earlier study and some data were already available. Since both measures have been found to correlate closely with difficulty, either one or the other might have been used.

The general trends in sentence-length shown in Table XXXIX are based on an analysis of 200 sentences in each of the

TABLE XXXIX

SUMMARY OF DATA OBTAINED FROM AN ANALYSIS OF SYLLABIC SENTENCE-  
LENGTH IN THE READING MATERIAL OF MAGAZINES,  
NEWSPAPERS, AND BOOKS

	General Magazines	Newspapers	Books
Range.....	202-1	140-1	297-1
Median.....	21.5	33.0	24.0
Third quartile.....	28.0	36.0	31.8
First quartile.....	18.2	27.0	16.5
Quartile range.....	9.8	9.0	15.3
Quartile deviation.....	4.9	4.5	7.7

materials sampled. From this table several differences are outstanding. Although all types of material contain sentences of one word, no magazine or newspaper contains a sentence as long as 297 syllables, found in one book, the original *Robinson Crusoe*. Were this book excluded, the longest sentence, 186 syllables, would then be comparable with the longest sentence in other materials.

A comparison of medians shows that half of the sentences in newspapers are at least 33 syllables in length; half of the sentences in books are 24 syllables or more in length; and in general magazines, half of the sentences equal or exceed 21.5 syllables. From these facts and from the size of the third quartile,

it is evident that the newspapers and books studied contain a larger proportion of long sentences than general magazines.

The agreement among materials of a class with respect to sentence-length is closest among newspapers and least in books, as shown by the quartile deviations. Again, the disparity among books seems to reflect the influence of adapted classics whose sentences have been intentionally shortened for the sake of simplicity.

Since this table presents summarized data, it can indicate only general trends of sentence-length and not the significant variations that actually appear among sentences in individual magazines, newspapers, and books. Some of these will be presented later.

#### SIMPLICITY OF SENTENCE STRUCTURE IN ADULT READING MATERIALS

The facts to be discussed in this section are derived from data pertaining to simple sentences which are summarized in Table XL. If one recalls that there are five kinds of sentences commonly recognized in a classification of sentences according to form—simple, compound, complex, compound-complex, and fragmentary—then the mean percentage of simple sentences suggests that this kind of sentence probably predominates in all types of material studied. From an actual count of other kinds of sentences, the results of which are not shown in this report, we have evidence to the effect that this hypothesis is true only for general magazines. In newspapers, complex sentences exceed simple sentences by 3 per cent. In books, they exceed simple sentences by about 1 per cent. Other kinds of sentences are relatively infrequent in all classes of materials.

The main facts to be derived from Table XL include the following: The range shows that no newspaper contains more than 50 per cent of simple sentences, whereas magazines contain as many as 62 per cent and books, 55.5 per cent. The extreme predominance of simple sentences, 62 per cent, occurs in a wood-pulp magazine of cheap stories of action, adventure, and in-

trigue. Writers of this sort of fiction uniformly adopt crisp, simple sentences or fragments of sentences in order to produce startling effects.

The size of the quartile deviations shows that general magazines follow the most consistent practice in use of simple sentences; and books, the least. The latter circumstance probably is explained by the inclusion of adapted texts with simplified sentence-structure, as well as the older classics in which the

TABLE XL

SUMMARY OF DATA OBTAINED FROM AN ANALYSIS OF SIMPLE SENTENCES  
IN THE READING MATERIAL OF MAGAZINES,  
NEWSPAPERS, AND BOOKS

	General Magazines	Newspapers	Books
Range.....	62.0 — 27.0	50.0 — 28.0	55.5 — 4.0
Mean.....	45.6 ± .55	41.5 ± 1.12	35.4 ± 1.46
Standard deviation.....	6.72 ± .78	6.42 ± .79	11.7 ± 1.03
Median.....	45.5	42.0	37.0
Third quartile.....	50.0	47.0	43.5
First quartile.....	41.0	37.0	28.8
Quartile range.....	9.0	10.0	14.7
Quartile deviation.....	4.5	5.0	7.4

sentences are notably involved. Greater uniformity might have resulted from confining books to current publications, as was done in the case of magazines and newspapers. Such a procedure seemed impossible, however, owing to the very nature of book-reading habits, which at their best are not restricted to current material.

#### DEFINING RELATIVE DIFFICULTY WITH RESPECT TO SPECIFIC ELEMENTS OF DIFFICULTY

From the data presented in the previous section we have been able to show what in general are the dominant characteristics of magazines, newspapers, and books with respect to four elements of difficulty, and to compare in a broad way the different classes of reading material. But that is all. And it is not enough.



For we are interested not only in similarities and differences among classes of reading materials, but in the variations within each class. Is the proportion of monosyllables the same in *Atlantic Monthly* as in *Liberty*? Does the reader of *Capper's Weekly* meet the same average sentence-lengths as the reader of *Christian Science Monitor*? How much has the percentage of simple sentences been increased in adapting *Silas Marner* for low levels of ability? Such questions as these must be answered in order to secure evidence by which a particular magazine, newspaper, or book is designated more or less difficult than another of its class.

The procedure followed in defining relative difficulty involves two steps. The first is to discover variations in the occurrence of the several elements of difficulty in individual materials with respect to the mean or median occurrence in all materials of a particular class. The second is, then, to classify materials into three groups designated "easy," "average," or "difficult." Here, "easy" is defined as an extreme deviation from the central tendency for a particular element in the direction of simplicity. "Difficult" is defined as extreme deviation in the opposite direction, that is, toward complexity. And "average" is defined as coincidence or approximate coincidence with the central tendency.

GENERAL MAGAZINES CLASSIFIED ACCORDING TO  
PERCENTAGE OF MONOSYLLABLES

Table XLI lists the sixty-eight magazines with the percentage of monosyllables found in each. They are arranged from the highest percentage of monosyllables, 75.8, in *Ranch Romances*, to the lowest percentage, 61.5, in *Review of Reviews*. By applying the data shown in Table XXXVII to those given in Table XLI, it is possible to define concretely what is meant by certain measures of variability in the former table. For example, we may say that the range of difficulty represented by general magazines extends from *Ranch Romances* to *Review of Reviews*. Half of the general magazines studied are easier than *Liberty*,

TABLE XLI

PERCENTAGE OF MONOSYLLABLES IN THE READING MATERIAL OF  
SIXTY-EIGHT GENERAL MAGAZINES

Magazine	Mono- syllables	Magazine	Mono- syllables
Ranch Romances.....	75.8	Collier's.....	68.9
True Story.....	75.2	Blue Book.....	68.7
Dream World.....	75.0	Motion Picture Classic.....	68.6
All-Story.....	74.2	Golden Book.....	68.5
People's Popular Monthly.....	74.1	Woman's World.....	68.5
True Romances.....	73.6	Needlecraft.....	68.4
Short Stories.....	73.5	Capper's Farmer.....	68.3
All-Star Detective Stories.....	73.2	Photoplay.....	68.3
Clues.....	72.3	Country Gentleman.....	67.9
Delineator.....	72.3	Holland's.....	67.8
Cosmopolitan.....	72.2	Motion Picture.....	67.7
Aces.....	72.1	Picture Play.....	67.7
Pictorial Review.....	72.0	Science and Invention.....	67.7
Ace-High.....	71.9	Screen Book.....	67.7
Gentlewoman.....	71.9	National Geographic.....	67.6
Detective Story.....	71.7	Atlantic Monthly.....	67.5
College Humor.....	71.4	True Detective Mysteries.....	67.5
McCall's.....	71.4	American Home.....	67.4
Red Book.....	70.9	Successful Farming.....	67.3
Good Housekeeping.....	70.8	Screenland.....	67.2
Ladies' Home Journal.....	70.6	Popular Mechanics.....	67.0
Farmer's Wife.....	70.5	New Movie.....	66.5
Field and Stream.....	70.5	Rotarian.....	66.4
Judge.....	70.5	Vogue.....	66.4
Holiday.....	70.4	National Farm Journal.....	66.2
Household.....	70.3	Nation's Business.....	65.8
American.....	70.1	Literary Digest.....	64.3
Woman's Home Companion.....	70.1	Popular Science.....	64.2
Better Homes and Gardens.....	70.0	Pathfinder.....	63.6
Saturday Evening Post.....	70.0	House and Garden.....	63.0
World's Work.....	70.0	Radio News.....	62.2
Sky Riders.....	69.6	Time.....	62.0
Outdoor Life.....	69.5	Review of Reviews.....	61.5
Liberty.....	69.4		
Mother's Home Life.....	69.0	Mean.....	69.24 ± .28
		S.D.....	3.37 ± .20

so far as syllabic word-length is concerned, and half are more difficult than *Mother's Home Life*, since the median percentage of monosyllables is located between these two magazines. One-fourth of the magazines in this class contain more monosyllables, on the average, than *College Humor* or *McCall's*, boundaries for the third quartile; whereas one-fourth contain a smaller percentage of monosyllables than *Atlantic Monthly*, which marks the first quartile.

In order to give a still more concrete notion of the degree of variability indicated by the statistical measures in Table XXXVII and at the same time illustrate differences among individual magazines listed in Table XLI, we have shown graphically in Figure 11 the percentage of monosyllables in the thousand-word sampling of five magazines. These periodicals represent points of variability among the magazines studied. *Ranch Romances* represents the highest point in the range of monosyllables and is therefore considered the easiest magazine; *College Humor* represents the third quartile; *Mother's Home Life*, the median; *Atlantic Monthly*, the first quartile; and *Review of Reviews*, the lowest point in the range. The last-mentioned magazine is presumably the most difficult from the point of view of word-length. The percentage of monosyllables is shown for ten hundred-word samplings, in ascending order from lowest to highest. For example, in *Ranch Romances*, there are 64 per cent of monosyllables in one hundred-word unit, 72 per cent in each of two hundred-word units, 73 per cent in one unit, and so on, to the highest percentage, 83, occurring in one hundred-word unit. Percentages for other magazines shown in the figure may be read in the same way. The figure indicates that there is marked variability among magazines with respect to the percentage of monosyllables they contain.

A study of differences among specific materials naturally leads to a study of likenesses. That is to say, if we set out to discover how magazines differ among others of their class in word-length, we shall end by discovering which ones approximately agree in word-length. This appears desirable, for if knowledge of the

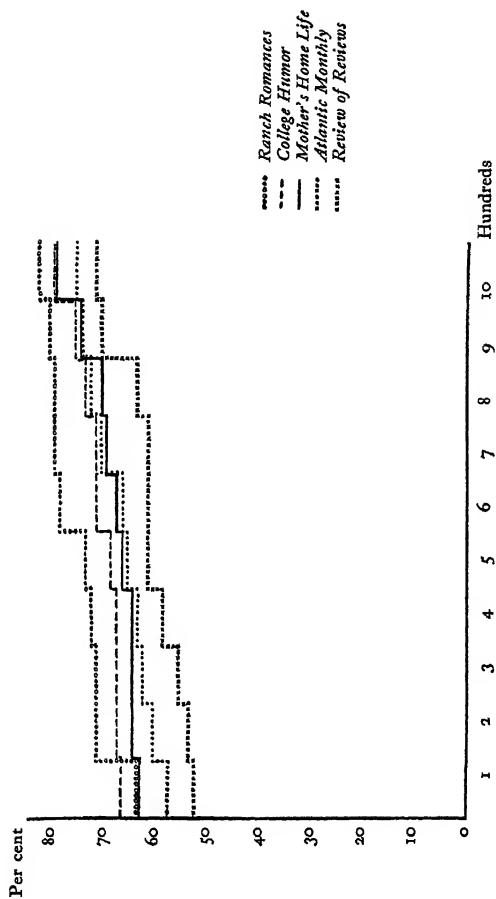


FIG. 11.—Percentage of monosyllables in 1,000 words in the reading material of five selected magazines.

characteristic features of reading material is to function for any practical purpose, it should enable one to recommend to a reader not just *this* magazine, but *this*, or *this*, or *this*.

Examination of Table XLI reveals seventeen magazines whose percentage of monosyllables varies not more than 1 per cent in either direction from the mean. They are: *American*, *Better Homes and Gardens*, *Blue Book*, *Capper's Farmer*, *Collier's*, *Golden Book*, *Liberty*, *Mother's Home Life*, *Motion Picture Classic*, *Needlecraft*, *Outdoor Life*, *Photoplay*, *Saturday Evening Post*, *Sky Riders*, *World's Work*, *Woman's Home Companion*, and *Woman's World*. It appears from this list that the reader whose interest leads him to *World's Work* need not anticipate encountering any longer words on the average than he may find in *Saturday Evening Post* or *Liberty*, since all belong to the group tentatively designated of "average" difficulty. If the first of these three magazines is more difficult than the other two, then it is clear that other elements than word-length must contribute to the difficulty.

Further study of the table shows that the reader whose taste leads him to *All-Story*, *Dream World*, *Ranch Romances*, and *True Story* is reading 75 per cent monosyllables; while he who reads the more serious content of *Radio News*, *Review of Reviews*, and *Time* is reading material in which the percentage of monosyllables is lowest among general magazines. The first four are obviously easiest of general magazines, and the last three, the hardest, in so far as percentage of monosyllables may be taken as a single index of difficulty.

Despite the fact that we have identified only a few magazines as "easy," "average," or "difficult," we do not presume to have exhausted the classification, for the reason that we have defined categories arbitrarily. To be classified in any one of these categories a magazine must contain monosyllabic words within 1 per cent of some particular statistical measure. We might quite as well have said within 2 per cent or 3 per cent, except for the reason that classifications are likely to be misleading if they are not defined rather rigorously. The relative difficulty of each

magazine can be defined above or below the mean, near to an extreme or far from it.

DIFFERENCES IN SYLLABIC WORD-LENGTH IN  
MAGAZINES OF DIFFERENT CONTENT

We now turn to consider the occurrence of monosyllables and polysyllables in three different classes of magazines: magazines of general fiction, of information, and of woman's interests. The basis of these classifications is given by Ayers.

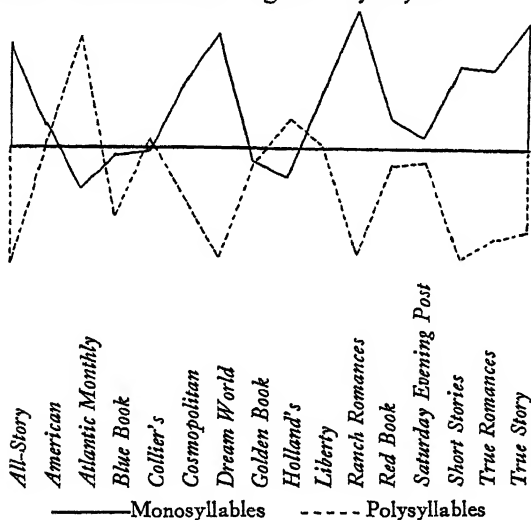


FIG. 12.—Proportionate occurrence of monosyllables and polysyllables in magazines of general fiction.

Figures 12, 13, and 14 give profiles of the three classes of magazines with respect to the mean percentage of monosyllables and polysyllables contained in them, when compared with the mean percentage for all magazines. The base line of each figure represents the mean of all syllabic word-lengths. The word-length for each magazine is expressed in terms of units of standard deviation,<sup>8</sup> which are shown in the figure on an absolute scale.

<sup>8</sup> The following formula was used in transmuting the means to units of standard deviation:  $\frac{X - Mx}{S.D.}$ , in which  $X$  indicates the mean of the magazine;  $Mx$ , the mean of the distribution; and  $S.D.$ , the standard deviation. See Holzinger, *op. cit.*, pp. 118-22.

Lines extending above the mean indicate positive deviations; lines extending below the mean, negative deviations. The unbroken line represents monosyllables; the broken line, polysyllables. Bisyllables and trisyllables are omitted from the figures for the sake of clarity.

An analysis of the profiles shows the magazines which are of average difficulty with respect to word-length and those

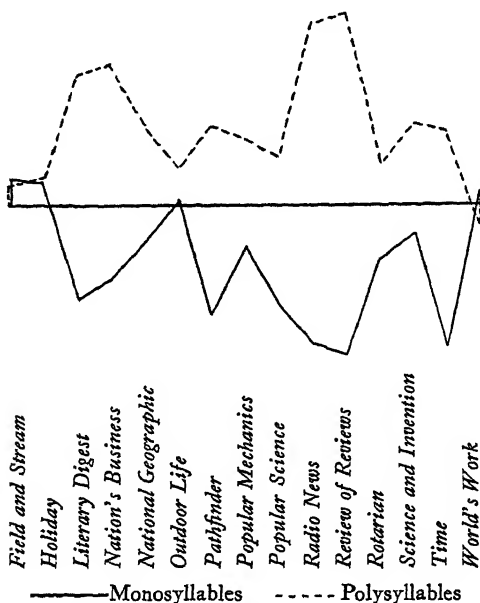


FIG. 13.—Proportionate occurrence of monosyllables and polysyllables in magazines of general information.

which are relatively easy or difficult. For example, *Collier's* approaches the mean for all magazines, and may be said to be of "average" reading difficulty. Similar observations may be made in regard to other magazines whose relation to the mean shows relatively the same narrow deviation. Distinctly easy reading in terms of word-length is shown for *All-Story*, *Dream World*, *Ranch Romances*, *Short Stories*, and *True Story*. For these magazines the deviation of monosyllables is from one to two sigmas

above the mean, and the deviation of polysyllables approximately as far below the mean. For *Atlantic Monthly*, *Nation's Business*, and *Review of Reviews*, deviations are in the opposite direction. Low negative deviations indicate a relatively small percentage of monosyllables. High positive deviations indicate a percentage of polysyllables conspicuously above the mean for all magazines.

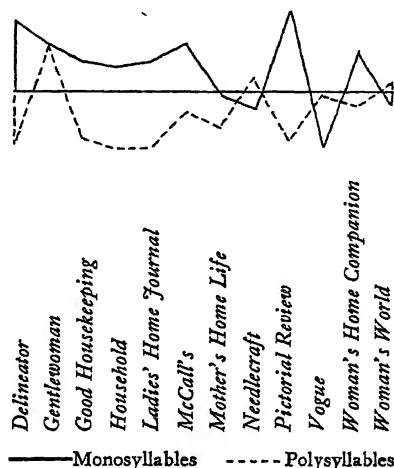


FIG. 14.—Proportionate occurrence of monosyllables and polysyllables in magazines of woman's interests.

An inspection of these figures leads to fairly definite conclusions with respect to monosyllabic and polysyllabic words found in magazines of similar content. Figure 12 shows that magazines of general fiction, with the exception of *Atlantic Monthly* and *Blue Book*, have a generally high positive deviation from the mean, when monosyllables are considered. This indicates that they contain one-syllable words considerably above the average word-length in all magazines. The figure also shows a generally low negative deviation with respect to polysyllables, indicating that, with the few exceptions already noted, these magazines contain a low percentage of words longer than three syllables.

In contrast, magazines of information, as shown in Figure 13, contain a relatively low percentage of monosyllables and a high



percentage of polysyllables. Woman's magazines, as shown in Figure 14, tend to deviate slightly, but with fair consistency, in a positive direction for monosyllables and in a negative direction for polysyllables. In general, the content in these magazines is neither so easy as is the content in magazines of general fiction nor so difficult as that in magazines of information.

The major purpose of these figures is to present facts graphically. Yet they do more. They raise questions for which we have no answer. For example: Who are the readers of *All-Story*, *Ranch Romances*, *True Story*, *Dream World*, *True Romances*, *Short Stories*, and other "easy" magazines? Do they read cheap fiction because it offers escape from reality, as is commonly believed? Or do they read it because it is better adapted to their level of reading ability than the higher quality found in *Atlantic Monthly* or *Golden Book*? Have they interest in the content of *Review of Reviews*, *Radio News*, *Nation's Business*, or *Popular Science*? Do they read these magazines as well as the easier ones? If not, would they read them were the vocabulary simplified to the level of *True Story* and *Ranch Romances*? But we are not dealing with readers primarily. Our concern is chiefly with reading materials. The most we can say in answer to such questions is that no other magazine material approaches the ease of easiest cheap fiction in so far as ease is measured by length of word.

#### GENERAL MAGAZINES CLASSIFIED BY PERCENTAGE OF DIFFERENT WORDS

Table XLII presents the sixty-eight magazines in order of difficulty from *Gentlewoman*, with 44 per cent of different words, to *Time*, with 55.9 per cent. Twenty-six magazines contain a percentage of different words which varies not more than 1 per cent in either direction from the mean, that is, between 49.5 and 51.5. They are *Ace-High*, *All-Story*, *American*, *American Home*, *Better Homes and Gardens*, *Clues*, *Cosmopolitan*, *Farmer's Wife*, *Field and Stream*, *Holland's*, *Household*, *Liberty*, *National Farm Journal*, *New Movie*, *Outdoor Life*, *Picture Play*, *Popular*

TABLE XLII

PERCENTAGE OF DIFFERENT WORDS IN SIXTY-EIGHT GENERAL MAGAZINES

Magazine	Percent- age of Different Words	Magazine	Percent- age of Different Words
Gentlewoman.....	44.0	Cosmopolitan.....	50.6
Dream World.....	44.1	True Detective Mysteries.....	50.8
True Romances.....	46.6	Household.....	51.0
Capper's Farmer.....	46.6	Ace-High.....	51.0
Aces.....	46.8	Short Stories.....	51.1
Detective Story.....	47.0	National Farm Journal.....	51.1
Ranch Romances.....	47.4	American.....	51.3
Radio News.....	47.6	Sky Riders.....	51.3
Rotarian.....	47.8	Popular Mechanics.....	51.4
People's Popular Monthly.....	47.9	Farmer's Wife.....	51.5
Holiday.....	48.2	Judge.....	51.6
Needlecraft.....	48.4	Woman's World.....	51.6
Nation's Business.....	48.4	Review of Reviews.....	51.7
Delineator.....	48.6	Red Book.....	51.8
College Humor.....	48.7	Saturday Evening Post.....	51.8
True Story.....	49.0	Atlantic Monthly.....	52.0
All-Star Detective Stories.....	49.0	Collier's.....	52.1
Photoplay.....	49.4	Mother's Home Life.....	52.1
Woman's Home Companion.....	49.5	McCall's.....	52.1
Better Homes and Gardens.....	49.5	Screen Book.....	52.2
World's Work.....	49.5	Ladies' Home Journal.....	52.3
Successful Farming.....	49.7	Motion Picture Classic.....	52.6
Field and Stream.....	49.7	Golden Book.....	53.1
All-Story.....	49.7	Pictorial Review.....	53.2
Popular Science Monthly.....	49.7	Blue Book.....	53.5
Science and Invention.....	49.8	Vogue.....	53.6
American Home.....	49.9	Motion Picture.....	53.7
Clues.....	50.0	Country Gentleman.....	54.1
New Movie.....	50.0	House and Garden.....	54.1
Liberty.....	50.0	Pathfinder.....	54.2
Screenland.....	50.2	National Geographic.....	54.3
Picture Play.....	50.3	Good Housekeeping.....	54.5
Outdoor Life.....	50.4	Literary Digest.....	55.0
Holland's.....	50.4	Time.....	55.9
		Mean.....	50.5 ± .19
		S.D.....	2.41 ± .13

*Mechanics, Popular Science Monthly, Science and Invention, Screenland, Short Stories, Sky Riders, Successful Farming, True Detective Mysteries, Woman's Home Companion, and World's Work.* So diversified is the content represented here that an "average" magazine can be selected readily to suit a wide variety of tastes and interests.

Two magazines, *Gentlewoman* and *Dream World*, contain the lowest percentage of different words and to that extent are designated "easiest" among the magazines studied. Two magazines at the upper end of the scale, namely, *Time* and *Literary Digest*, are ranked of greatest difficulty with respect to percentage of different words.

Although there is a tendency for magazines of general information to utilize a larger percentage of different words than magazines of fiction, the tendency is not consistent enough in itself to warrant the generalization that informational magazines are more difficult than fiction. However, the former have been found by the earlier analysis to contain a percentage of monosyllables consistently below the mean. There is some evidence, then, for the observation that the content of informational magazines is less simply expressed than is that of fiction magazines.

#### GENERAL MAGAZINES CLASSIFIED BY AVERAGE LENGTH OF SENTENCES

It is always difficult to make reliable distinctions based on central tendencies, but it is especially complicating when the basis of comparison is, for example, the median of 200 sentences. If we say that the median length of sentences in *Aces* is 13 syllables and in *Review of Reviews* 33 syllables, all we have shown is that in each magazine half the sentences are longer and half are shorter than the median length. How much longer or how much shorter they are in their respective halves is not very clear. A graphic presentation of the length of sentences sampled from the two magazines shown in Figures 15 and 16 makes the difference implied by the two medians far more intelligible.

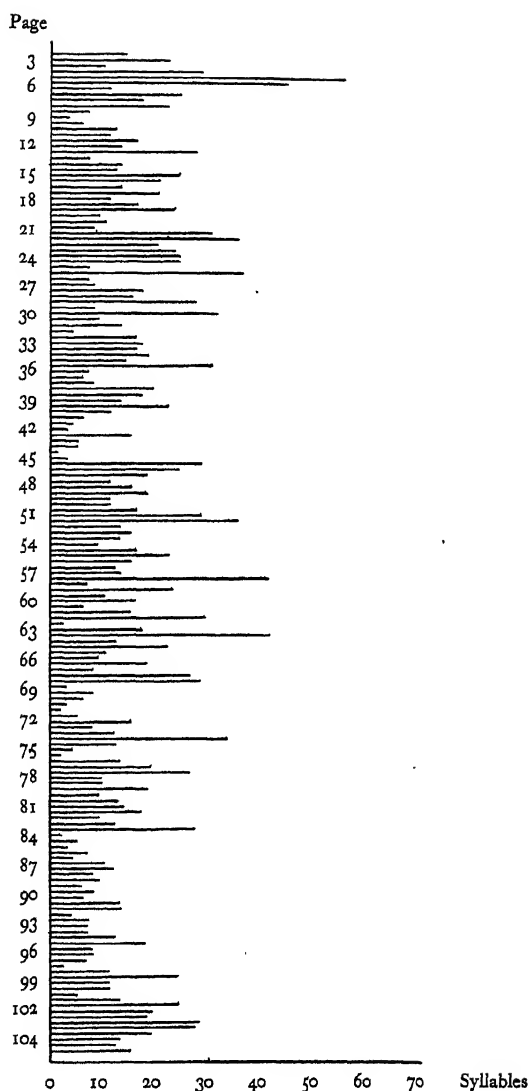


FIG. 15.—Analysis of the first 175 sentences in the 200-sentence unit selected from the reading material of *Aces*.

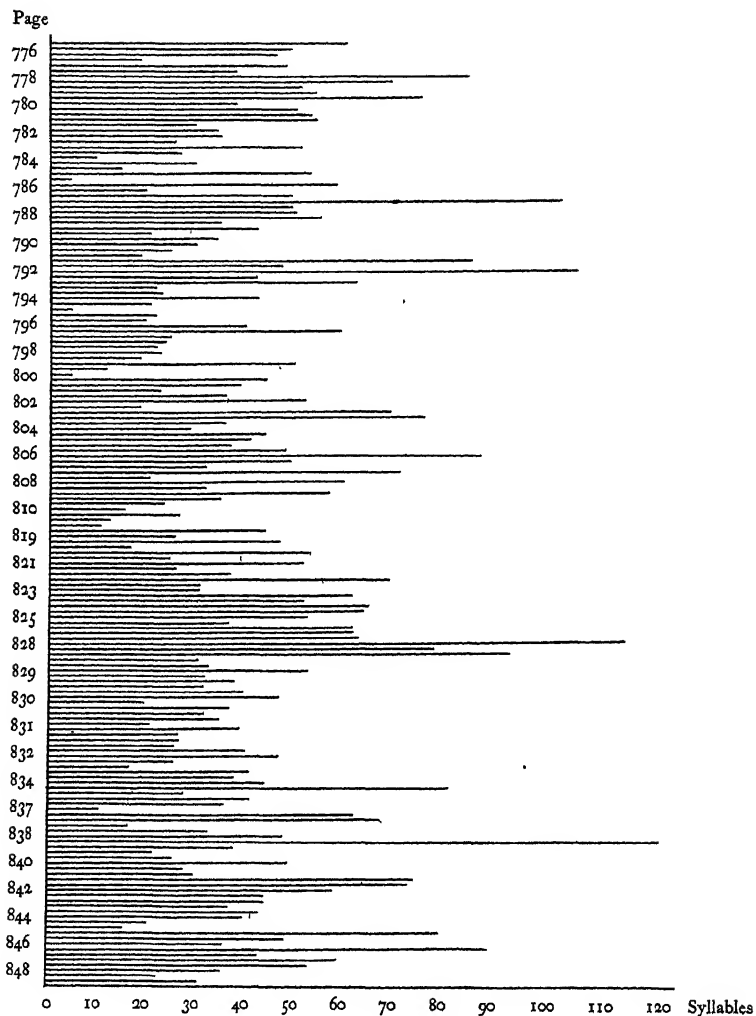


FIG. 16.—Analysis of the first 175 sentences in the 200-sentence unit selected from the reading material of *Review of Reviews*.

But to attempt distinctions based on the number of syllables in each of the 200 sentences in all the materials analyzed is obviously impossible. We have, therefore, based our conclusions regarding the relative difficulty of different magazines on the median sentence-lengths shown in Table XLIII.

Seventeen magazines with a median sentence-length varying not more than two syllables in either direction from the composite median are: *American*, *Blue Book*, *Capper's Farmer*, *Collier's*, *Household*, *Judge*, *Liberty*, *McCall's*, *Mother's Home Life*, *Motion Picture*, *New Movie*, *Photoplay*, *Picture Play*, *Saturday Evening Post*, *Screenland*, *Screen Book*, and *Woman's World*. All of the motion-picture magazines and several of the so-called "home" magazines are included in this "average" group. Shortest sentences as determined by their median lengths occur in *Aces*, *All-Story*, *All-Star Detective Story*, *Pictorial Review*, and *Detective Story*. These are the easiest general magazines. The hardest magazines, with respect to length of sentence, are *American Home*, *Atlantic Monthly*, *Radio News*, *Review of Reviews*, *Rotarian*, and *Science and Invention*.

That the easiest magazines are generally fiction, and the hardest, magazines of information, is shown in Figures 17 and 18. As may reasonably be expected, magazines of general fiction show less consistent deviation with respect to sentence-length than magazines of information. The former group includes both wood-pulp magazines, whose chief virtue is simplicity, and quality magazines like *Atlantic Monthly*, whose chief defect is complexity.

#### GENERAL MAGAZINES RANKED BY PERCENTAGE OF SIMPLE SENTENCES

Table XLIV presents the facts concerning the percentage of simple sentences in different magazines. The area of difficulty defined by simple sentences extends from *Sky Riders*, with 62 per cent, to *Atlantic Monthly*, with 27 per cent. These two magazines represent quite distinct degrees of difficulty. The first contains from 3 to 5 per cent more simple sentences than the next

TABLE XLIII

RANGE OF SYLLABIC SENTENCE-LENGTH AND MEDIAN SENTENCE-LENGTH  
IN SIXTY-EIGHT GENERAL MAGAZINES

Magazines	Range	Median	Magazines	Range	Median
Aces.....	55-1	13.0	Photoplay.....	71-1	22.0
All-Story.....	60-1	13.0	New Movie.....	72-1	22.0
All-Star Detective Story..	76-1	14.0	Picture Play.....	97-2	22.5
Pictorial Review.....	103-1	14.0	Capper's Farmer.....	81-4	23.0
Detective Story.....	79-1	14.0	Judge.....	91-1	23.0
Clues.....	62-2	15.0	Woman's World.....	93-2	23.0
Sky Riders.....	54-1	15.0	Successful Farming.....	98-4	24.0
Ranch Romances.....	61-1	15.0	Farmer's Wife.....	113-2	25.0
Gentlewoman.....	89-2	15.5	Ladies' Home Journal....	140-2	25.0
College Humor.....	121-2	16.0	Golden Book.....	173-1	25.0
People's Popular Monthly..	74-1	16.0	Country Gentleman.....	143-1	25.0
Dream World.....	72-1	17.0	Time.....	101-2	25.5
Ace-High.....	64-1	17.0	National Geographic.....	93-1	26.0
True Story.....	106-2	17.0	National Farm Journal..	101-3	26.0
Delineator.....	115-2	17.0	Better Homes and Gardens	84-1	27.0
Cosmopolitan.....	115-2	18.0	Outdoor Life.....	134-2	28.0
Red Book.....	92-1	18.0	Popular Science.....	73-4	28.0
Motion Picture Classic...	87-1	18.5	Holland's.....	103-2	28.0
True Romance.....	77-1	18.5	Holiday.....	109-1	28.5
Woman's Home Companion..	90-2	19.0	Vogue.....	103-2	29.0
Good Housekeeping.....	69-1	19.0	Field and Stream.....	89-2	29.5
True Detective Mysteries..	109-1	19.0	House and Garden.....	101-2	30.0
Short Stories.....	77-1	19.0	Needlecraft.....	111-1	30.5
Screen Book.....	92-1	20.0	Nation's Business.....	180-3	31.0
Motion Picture.....	100-1	20.0	Popular Mechanics.....	110-2	31.0
Collier's.....	81-1	20.0	Pathfinder.....	106-2	31.0
Household.....	92-2	20.5	World's Work.....	109-1	31.0
Blue Book.....	98-1	20.5	Literary Digest.....	110-2	31.0
Liberty.....	102-2	20.5	American Home.....	82-3	32.0
McCall's.....	96-1	21.0	Science and Invention....	142-3	32.0
Saturday Evening Post...	52-1	21.0	Atlantic Monthly.....	202-1	32.0
Screenland.....	125-1	21.0	Rotarian.....	182-2	33.0
Mother's Home Life.....	95-2	21.0	Radio News.....	141-4	33.0
American.....	93-2	21.0	Review of Reviews.....	121-3	33.5
			Composite median.....		21.5
			Q.....		4.9

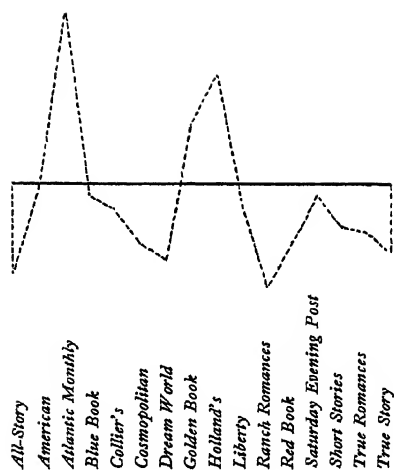


FIG. 17.—Syllabic length of sentences in magazines of general fiction

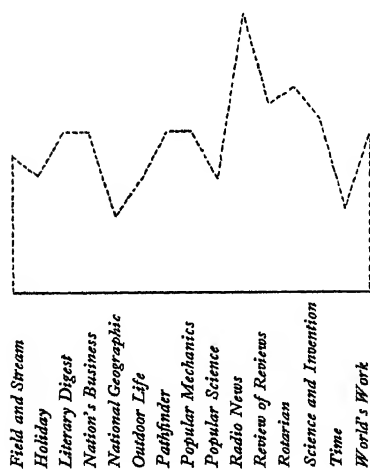


FIG. 18.—Syllabic length of sentences in magazines of general information



TABLE XLIV

PERCENTAGE OF SIMPLE SENTENCES IN THE READING MATERIAL  
OF SIXTY-EIGHT GENERAL MAGAZINES

MAGAZINE	TYPE	MAGAZINE	TYPE
	Simple		Simple
Sky Riders.....	62.0	American Home.....	45.5
Time.....	59.0	American.....	45.5
People's Popular Monthly.....	57.0	House and Garden.....	45.0
All-Star Detective Stories.....	56.5	Nation's Business.....	44.5
Popular Mechanics.....	54.0	Collier's.....	44.0
Ace-High.....	54.0	College Humor.....	43.5
Clues.....	54.0	Woman's World.....	43.0
New Movie.....	53.0	Blue Book.....	43.0
Woman's Home Companion.....	52.5	Ladies' Home Journal.....	43.0
Pictorial Review.....	52.5	All-Story.....	43.0
Successful Farming.....	52.0	Saturday Evening Post.....	42.0
Motion Pictures.....	51.5	Science and Invention.....	42.0
Aces.....	51.5	Delineator.....	42.0
Capper's Farmer.....	51.0	Gentlewoman.....	41.5
Short Stories.....	51.0	Radio News.....	41.5
Needlecraft.....	50.5	Judge.....	41.5
Pathfinder.....	50.0	Mother's Home Life.....	41.0
Detective Story Magazine.....	50.0	Red Book.....	41.0
Better Homes and Gardens.....	49.5	Cosmopolitan.....	41.0
Country Gentleman.....	49.0	Literary Digest.....	40.5
Screen Book.....	49.0	Holiday.....	40.5
Popular Science Monthly.....	48.0	Good Housekeeping.....	40.0
Review of Reviews.....	47.5	Household.....	39.5
National Geographic.....	47.5	True Detective Mysteries.....	39.5
Photoplay.....	47.5	Holland's.....	39.5
Screenland.....	47.5	Golden Book.....	38.5
Farmer's Wife.....	47.5	Field and Stream.....	36.5
Outdoor Life.....	47.5	True Story.....	36.0
Rotarian.....	46.5	Picture Play.....	34.5
National Farm Journal.....	46.5	True Romances.....	34.0
McCall's.....	46.0	World's Work.....	34.0
Vogue.....	45.5	Ranch Romances.....	33.0
Motion Picture Classic.....	45.5	Dream World.....	32.5
Liberty.....	45.5	Atlantic Monthly.....	27.0
		Mean.....	45.56 ± .55
		S.D.....	6.72 ± .39

easiest magazines, *Time*, *People's Popular Monthly*, and *All Star Detective Stories*. And *Atlantic Monthly* contains about 6 per cent less than *Dream World* and *Ranch Romances*, the next most difficult magazines as defined by the occurrence of simple sentences. Since the last two magazines have heretofore been ranked "easy," the classification by simple sentences appears contradictory. An examination of Table XLIV shows that other fiction magazines also contain a relatively low percentage of simple sentences. This, too, seems contrary to expectations. One possible explanation lies in the fact that fiction, especially of the cheaper sort, uses a large amount of conversation expressed in sentence-fragments, the meaning of which is implied by the emotional tone of the conversation. For example, 9 per cent of the sentences in *Red Book* are of this sort. In *Ranch Romances*, sentence-fragments number 7.5 per cent; in *Aces*, 14 per cent.

In the average group with respect to simplicity of sentences are ranked *American*, *American Home*, *Collier's*, *House and Garden*, *Liberty*, *McCall's*, *Motion Picture Classic*, *National Farm Journal*, *Nation's Business*, *Rotarian*, and *Vogue*.

#### GENERAL MAGAZINES IN COMPOSITE RANKING OF DIFFICULTY

Having shown the relative difficulty of the magazines studied by rankings on the basis of four elements of difficulty, we are now in a position to show the composite ranking of these magazines from all the facts available. Table XLV gives a composite classification of magazines as "easy," "average," or "difficult." Although in general this classification represents the trend of difficulty shown in earlier tables, some supplementary data have been used not presented in this report. They were obtained by analyzing doubtful magazines for occurrence of different hard words, words not known to 90 per cent of sixth-grade children, easy words, personal pronouns, and prepositional phrases.

Magazines classified in Table XLV are, therefore, those

which hold relatively the same position of difficulty by three or more analyses. Magazines excluded from this classification either fail to fall consistently within one of the three categories or fall generally outside the areas designated "easy," "average," or "difficult." Their relative difficulty may be estimated roughly from their rankings in Tables XLI-XLIV.

TABLE XLV  
RELATIVE DIFFICULTY OF GENERAL MAGAZINES BY COMPOSITE  
CLASSIFICATION ON THE BASIS OF FOUR  
ELEMENTS OF DIFFICULTY

Easy	Average	Difficult
Aces All-Story Dream World Clues Gentlewoman True Romances	American American Home Better Homes and Gardens Collier's McCall's Mother's Home Life Capper's Farmer Sky Riders Picture Play New Movie Liberty Motion Picture Classic Cosmopolitan Saturday Evening Post Outdoor Life House and Garden World's Work	Atlantic Monthly Literary Digest Pathfinder Radio News Review of Reviews

From the facts pertaining to the occurrence of significant elements of difficulty in general magazines, the following conclusions seem warranted:

1. It is evident that definite strata of difficulty exist among general magazines when difficulty is measured by the presence or absence of certain structural elements.

2. There is marked agreement among rankings by individual elements for those magazines defined as "easy," "average," or "difficult." Less agreement exists among magazines at intermediary positions.

3. If a magazine consistently ranks of the same relative diffi-

culty by three or more single elements, the use of a larger number of elements is usually unnecessary.

4. It seems significant to note that magazines which rank "average" are the most popular magazines. They represent the widest circulation among all magazines. One-third have a circulation above 2,000,000; one-half, above 1,000,000; and two-thirds, above 200,000. Several inferences may be drawn. One is that their content is what most magazine readers want to read about. Another is that the average difficulty of their content is suited to the reading ability of most magazine readers. A third is that editors of these "average" magazines definitely aim to reach a large number of readers by means of interesting content, easy expression, popular price, and other factors. For example, *Liberty* and *American* rank "average" by every measure applied in this section. They are typical average magazines, then, when difficulty is measured by structural elements significantly related to difficulty.

5. Circulation figures for magazines designated "easy" show that all are purchased and presumably read by more than 200,000 persons, and one by more than 1,000,000. We can only conjecture as to whether readers of these magazines actually prefer low-grade, all-fiction content; whether their ability to read is best served by these magazines; or whether, having found a certain pleasure in effortless reading, they are too indolent to learn to like anything better.

6. Magazines rated most difficult tend to be in least demand among adult readers. Less than one-half have circulation figures above 200,000.

7. Writers on politics, world-news, and informational material in general tend to use longer words and sentences than do writers of fiction. With respect to percentage of different words, they seem to follow no general practice. There is evidence that although the thought-content expressed by these writers may be harder than fiction, words used in expressing it may or may not be greatly diversified.

8. Writers who make their appeal to the primary and elemental interests of their readers tend to utilize the simplest

structural elements and, consequently, to produce materials easiest to read.

# HOW DO NEWSPAPERS VARY WITH RESPECT TO ELEMENTS OF DIFFICULTY?

This question is answered by Tables XLVI–XLIX. In each, the fifteen newspapers are listed in order of difficulty, as determined by the occurrence of a specific element of difficulty. For

TABLE XLVI  
PERCENTAGE OF MONOSYLLABLES IN THE READING MATERIAL  
OF FIFTEEN NEWSPAPERS

Newspaper	Monosyllables
Chicago Daily Times . . . . .	70.6
Capper's Weekly . . . . .	68.9
Riceville Recorder . . . . .	67.5
Chicago Tribune . . . . .	65.4
New York Evening Graphic . . . . .	64.9
New York News . . . . .	64.8
Boston Post . . . . .	64.4
Edmore Herald-News . . . . .	64.3
Christian Science Monitor . . . . .	62.7
Los Angeles Times . . . . .	62.3
Chicago American . . . . .	62.2
New York Journal . . . . .	62.0
Philadelphia Evening Bulletin . . . . .	62.0
Jefferson Banner . . . . .	61.7
Olney Daily Mail . . . . .	61.3
Mean . . . . .	64.3 ± .47
S.D. . . . .	2.68 ± .33

example, in Table XLVI the *Chicago Daily Times* is easiest and the *Olney Daily Mail*, hardest, with respect to monosyllables. In Table XLVII the *Riceville Recorder*, with 46.2 per cent of different words, ranks easiest; and the *Los Angeles Times*, with 53.2 per cent, ranks hardest. Data presented in these tables support the facts revealed by Tables XXXVII–XL to the effect that newspapers as a class tend to agree fairly closely in their use of elements of expression included in this study. For this reason we have made no attempt to classify the fifteen newspapers according to relative difficulty.

In so far as the data warrant, we may define the relative difficulty of newspapers as a class in terms of specific publications. For example, the area of difficulty represented by the fifteen newspapers studied extends from the level of *Capper's Weekly* and the *Chicago Daily Times* to that of the *Los Angeles Times* and *Christian Science Monitor*. Between these two extremes, which are after all not conspicuously different, lies an intermediate area. This area is generally characterized by village week-

TABLE XLVII

## PERCENTAGE OF DIFFERENT WORDS IN FIFTEEN NEWSPAPERS

Newspaper	Percentage of Different Words
Riceville Recorder.....	46.2
Capper's Weekly.....	48.5
Edmore Herald-News.....	49.5
Chicago Tribune.....	50.3
Philadelphia Evening Bulletin.....	50.3
Chicago Daily Times.....	50.6
New York News.....	51.0
New York Evening Graphic.....	51.3
Boston Post.....	51.6
Chicago American.....	51.7
Jefferson Banner.....	51.9
Christian Science Monitor.....	52.2
Olney Daily Mail.....	52.5
New York Journal.....	53.1
Los Angeles Times.....	53.2
Mean.....	50.9 $\pm$ .31
S.D.....	1.77 $\pm$ .22

ly papers, such as *Edmore Herald-News* and *Jefferson Banner*, the difficulty of which tends to merge on the one side with that of graphics and on the other with the usual large daily newspaper.

OCCURRENCE OF SIGNIFICANT ELEMENTS OF DIFFICULTY  
IN DIFFERENT CLASSES OF NEWSPAPERS

Interesting differences are revealed by comparing the occurrence of elements of difficulty in newspapers published pri-

marily to serve a particular class of readers. Figure 19 shows these differences in percentage of monosyllables and polysyllables. In large daily newspapers, excluding graphics, monosyllables tend to deviate negatively from the mean; and polysyllables, positively. In graphics, the direction of the deviations is reversed. In other words, the reader who extracts his news in

TABLE XLVIII

RANGE OF SYLLABIC SENTENCE-LENGTH AND MEDIAN SENTENCE-LENGTH IN FIFTEEN NEWSPAPERS

Newspaper	Syllabic Range	Median
Olney Daily Mail.....	82-2	21.5
Capper's Weekly.....	122-4	22.0
New York Evening Graphic.....	92-3	26.5
New York News.....	90-1	27.0
Chicago Daily Times.....	76-5	29.0
Los Angeles Times.....	132-4	31.0
Chicago American.....	81-7	31.0
Riceville Recorder.....	130-6	33.0
Jefferson Banner.....	126-4	34.0
Boston Post.....	114-3	34.0
New York Journal.....	101-4	35.0
Philadelphia Evening Bulletin.....	113-5	36.0
Chicago Tribune.....	96-5	37.0
Christian Science Monitor.....	126-5	39.0
Edmore Herald-News.....	140-1	40.5
Composite median.....		33.0
Q.....		4.5

literal form from the usual daily newspaper reads a larger percentage of long words than does the person who reads the picture newspaper with its minimum of print. Does the latter reader prefer the picture newspaper because pictures provide easy reading or because short words make reading easy? Or is there another factor than ease that accounts for the preference? Again, the question suggests the kind of information needed to explain why people read what they do.

The easiest paper illustrated in the figure is the *Chicago Daily*

*Times*; the hardest, the *Christian Science Monitor*. Inasmuch as village and rural papers show no consistent tendency toward simplicity or complexity as measured by word-length, they are not given in the diagram.

Despite the close agreement among newspapers with respect to percentage of different words shown in Table XLVII, there

TABLE XLIX  
PERCENTAGE OF SIMPLE SENTENCES IN THE READING  
MATERIAL OF FIFTEEN NEWSPAPERS

NEWSPAPER	TYPE OF SENTENCE STRUCTURE
	Simple
Los Angeles Times.....	50.0
Olney Daily Mail.....	50.0
Capper's Weekly.....	49.0
New York Evening Graphic.....	47.0
Jefferson Banner.....	44.0
New York News.....	44.0
Chicago Daily Times.....	44.0
Riceville Recorder.....	42.0
Philadelphia Evening Bulletin.....	42.0
Chicago American.....	40.0
Chicago Tribune.....	38.0
Christian Science Monitor.....	37.0
Boston Post.....	37.0
New York Journal.....	30.0
Edmore Herald-News.....	28.0
Mean.....	41.46 ± 1.12
S.D.....	6.42 ± .79

is a tendency for the vocabulary of village and rural papers to be slightly less diversified than that of large daily papers. Although the difference in range of different words is on the average no more than 7 per cent, it is enough to show the influence of cosmopolitan news on difficulty.

When lengths of sentences are compared (Fig. 20), it may be noted that large daily newspapers, exclusive of graphics, on the average contain longer sentences than the mean sentence-length for all newspapers. Graphics, on the other hand, employ shorter



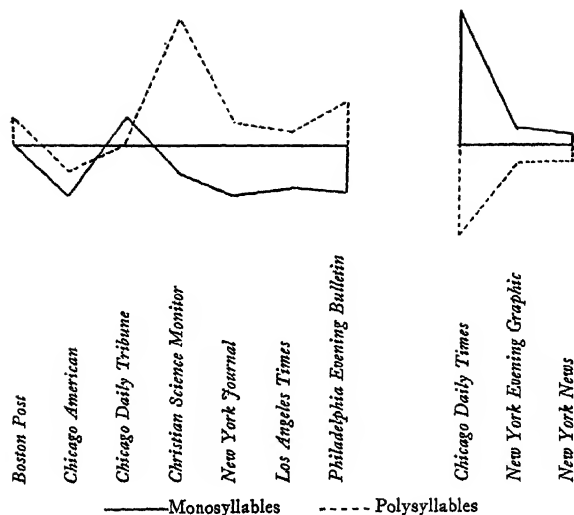


FIG. 19.—Proportionate occurrence of monosyllables and polysyllables in daily newspapers.

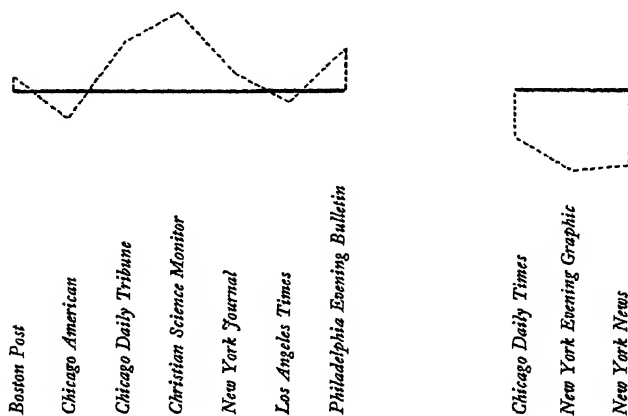


FIG. 20.—Syllabic length of sentences in daily newspapers

sentences than the common mean. The longest sentences occur in *Christian Science Monitor*, which also contains the lowest percentage of monosyllables and a diversity of vocabulary above the median. No generalization can be made with respect to the length of sentences that characterize rural and village papers. Two papers in this class, however, *Capper's Weekly* and *Olney Daily Mail*, use the shortest sentences among the newspapers studied. The facts from which Figure 20 was derived seem to suggest that rural and village publications employ a simplicity of expression, as measured by sentence-length, more nearly like graphics than other daily newspapers.

Distinctions between different types of newspapers with respect to sentence-form may be obtained from Table XLIX. The facts presented suggest that picture newspapers which contain a percentage of simple sentences above the common mean are probably easier than other metropolitan papers containing a percentage of simple sentences below the mean. Rural and village publications do not vary markedly in either direction from common practice.

#### WHAT DIFFERENCES EXIST AMONG DEPARTMENTS OF NEWSPAPERS?

Inasmuch as newspaper material on the whole tends toward a consistent use of different structural elements, question may be raised as to whether separate departments of newspapers agree as closely. We, therefore, have analyzed word-lengths in each of nine departments chosen for study with the following results: (1) More agreement in the use of monosyllables exists in "Local News" than in any other department. (2) Least agreement is found in "Washington News." (3) The range of polysyllables is widest in "Editorials" and narrowest in "Local News." (4) The highest percentage of polysyllables occurs in "Washington News" and the lowest in "Local News." (5) Large daily papers tend to use a lower percentage of monosyllables in their "Local News" than do village papers. (6) Although individual newspapers vary the proportionate word-lengths in dif-

ferent departments, there is no evidence to indicate that they follow any definite practice except in "Local News."

DIFFERENCES AMONG TWENTY-NINE BOOKS WITH  
RESPECT TO LENGTH OF WORD

Table L brings out the differences in syllabic word-length found in an analysis of twenty-nine books. It will be remem-

TABLE L  
PERCENTAGE OF MONOSYLLABLES IN THE READING  
MATERIAL OF TWENTY-NINE BOOKS

Book	Percent- age of Mono- syllables	Book	Percent- age of Mono- syllables
Robinson Crusoe (adapted)....	83.3	Reading and Living, Book III..	72.9
Carl and Anna.....	81.2	Cimarron.....	72.6
Huckleberry Finn.....	79.7	Moby Dick (original).....	72.0
All Quiet on the Western Front..	77.6	Silas Marner (original).....	72.0
Reading and Living, Book I....	77.5	Poe's Tales.....	71.1
Robinson Crusoe (original).....	76.9	Scarlet Letter, The.....	69.7
Bible.....	75.9	Byron.....	69.3
Reading and Living, Book II....	75.9	Preface to Morals, A.....	68.9
Silas Marner (adapted).....	75.8	Henry the Eighth.....	68.6
Moby Dick (adapted).....	75.4	Last of the Mohicans, The....	68.5
Peder Victorious.....	75.1	Art of Living, The.....	68.4
Roper's Row.....	75.0	Elizabeth and Essex.....	66.2
Angel Pavement.....	74.7	Tragic Era, The.....	61.9
Scarlet Sister Mary.....	74.7		
White Oaks of Jalna.....	73.2	Mean.....	73.4 $\pm$ .55
Story of San Michele, The.....	73.0	S.D.....	4.42 $\pm$ .39

bered that these books include popular novels, popular general books, standard fiction, and simplified classics.

The area of difficulty shown in the table extends from the adapted *Robinson Crusoe*, with 83.3 per cent of monosyllables, to *The Tragic Era*, with 61.9 per cent. Three areas of difficulty are rather sharply defined. In the "average" group are *Angel Pavement*, *Cimarron*, *Peder Victorious*, *Roper's Row*, *Scarlet Sister Mary*, *White Oaks of Jalna*, and *Reading and Living*, Book III. What this statement seems to imply is that, with the

exception of one novel, *All Quiet on the Western Front*, which is apparently easier than those just listed, all popular novels studied contain an average proportion of short words about like that in a randomly selected reading text for sixth grade.

Books which contain the lowest percentage of monosyllables belong to the class designated "popular general books." They are: *The Art of Thinking*, *A Preface to Morals*, *Elizabeth and*

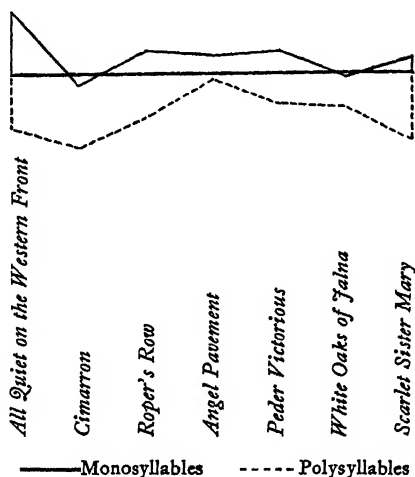


FIG. 21.—Proportionate occurrence of monosyllables and polysyllables in popular novels.

*Essex*, and *The Tragic Era*. At the opposite extreme of the list are *Robinson Crusoe* (adapted), *Reading and Living*, Book I, *Carl and Anna*, *Huckleberry Finn*, and *All Quiet on the Western Front*. These are the easiest books, when word-length is taken as a single index of difficulty.

Figures 21 and 22 support the facts already presented, that popular novels are about of average difficulty and popular general books are most difficult among the books studied. The profiles of popular fiction show relatively little deviation from the mean for monosyllables and polysyllables. Popular general books, on the other hand, commonly show a negative deviation for monosyllables and a positive deviation for polysyllables.

## BOOKS CLASSIFIED ACCORDING TO VOCABULARY DIVERSITY

The conclusion to be drawn from an analysis of extent of vocabulary, Table LI, is that more agreement than variation persists among the books studied, except in those whose writers have consciously attempted to reduce the size of vocabulary for

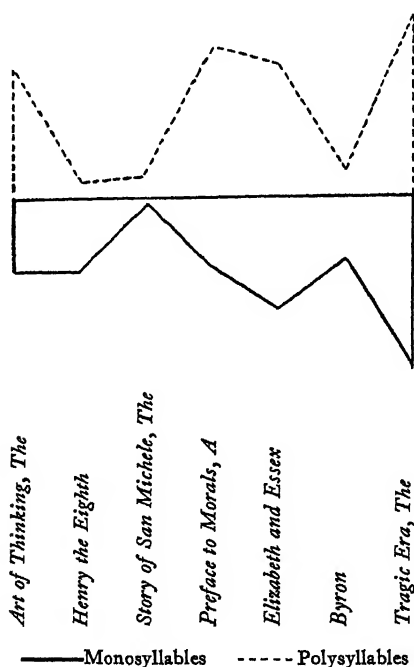


FIG. 22.—Proportionate occurrence of monosyllables and polysyllables in popular general books.

the sake of simplicity. For example, *Carl and Anna*, with basic English vocabulary intended "to do the work of the 20,000 common words usually required for the same purpose," contains 25.5 per cent of different words. This is against 42.5 per cent, the mean for all books studied, and 50.6 per cent for *The Tragic Era*. Adapted versions of *Robinson Crusoe* and *Silas Marner* rank close to *Carl and Anna*.

Few books vary in any considerable degree from the mean for

all books studied. The most difficult has a vocabulary about as diversified as a sixth-grade reader, *Reading and Living*, Book

TABLE LI  
VOCABULARY DIVERSITY IN TWENTY-NINE BOOKS

Book	Percentage of Different Words
Carl and Anna .....	25.5
Robinson Crusoe (adapted) .....	29.6
Silas Marner (adapted) .....	35.4
Bible .....	36.1
Robinson Crusoe (original) .....	37.6
Huckleberry Finn .....	37.7
Preface to <i>Morals</i> , A .....	39.2
<i>Moby Dick</i> (adapted) .....	39.2
<i>Reading and Living</i> , Book I .....	41.7
Angel Pavement .....	41.7
All Quiet on the Western Front .....	41.8
Roper's Row .....	42.1
Peder Victorious .....	42.4
Scarlet Letter, The .....	43.7
Art of Thinking, The .....	44.4
Silas Marner (original) .....	44.8
Scarlet Sister Mary .....	44.8
<i>Moby Dick</i> (original) .....	45.1
Elizabeth and Essex .....	45.4
Poe's Tales .....	45.9
Cimarron .....	45.9
White Oaks of Jalna .....	46.3
Last of the Mohicans, The .....	46.8
Story of San Michele, The .....	46.9
Byron .....	47.3
Henry the Eighth .....	47.9
<i>Reading and Living</i> , Book II .....	48.1
<i>Reading and Living</i> , Book III .....	48.3
Tragic Era, The .....	50.6
Mean .....	42.5 $\pm$ .69
S.D. ....	5.58 $\pm$ .49

III. In the "average" group belong *The Art of Thinking*, *Cimarron*, *Elizabeth and Essex*, *Moby Dick* (original), *Peder Victorious*,

*Poe's Tales*, *The Scarlet Letter*, *Scarlet Sister Mary*, *Silas Marner*, and *White Oaks of Jalna*. Again, most of these books are popular novels, the "averageness" of which is shown by their slight variation from the mean for all books.

RELATIVE DIFFICULTY OF BOOKS DETERMINED BY  
AVERAGE LENGTH OF SENTENCES

In the very scattered distribution of books based on median length of sentences (Table LII), the original *Robinson Crusoe* ranks highest with a median sentence-length of 87 syllables. *A Preface to Morals* and the original *Silas Marner* rank next with median sentence-lengths of 37 and 36.5 syllables, respectively. It seems reasonable to assume that the extraordinary length of sentences found in *Robinson Crusoe* does not imply the same sort of complexity that characterizes *A Preface to Morals*. It rather illustrates the simple run-on, unpunctuated thought-units typical of the early tale. Such sentences are in reality simple, if the reader supplies the internal punctuation necessary to distinguish single thought-units.

Easiest books, that is, those containing the lowest average length of sentence, are *Roper's Row*, *Silas Marner* (adapted), and *Angel Pavement*. Popular fiction generally ranks below the median length for all books, as exemplified by *Reading and Living*, Book III, and *Henry the Eighth*. If *Peder Victorious*, *Scarlet Sister Mary*, *Cimarron*, *All Quiet on the Western Front*, *White Oaks of Jalna*, and other easy books are representative of their class, then modern novelists may be said generally to employ short sentences. Writers of popular non-fiction, on the other hand, tend to use sentences somewhat longer than the median length for all books studied.

BOOKS CLASSIFIED ACCORDING TO SIMPLICITY  
OF SENTENCE FORM

When facts are considered relative to the structure of sentences (Table LIII), *Cimarron* is found to rank highest in percentage of simple sentences and the original *Robinson Crusoe*, lowest.

The former, a modern story of adventure in the pioneer West, is a swiftly moving, cinematic panorama of events; whereas the

TABLE LII

RANGE OF SYLLABIC SENTENCE-LENGTH AND MEDIAN SENTENCE-LENGTH IN TWENTY-NINE BOOKS

Book	Syllabic Range	Median
Robinson Crusoe (original).....	297-13	87.0
Preface to <i>Morals</i> , A.....	153- 5	37.0
Silas Marner (original).....	163- 2	36.5
Last of the Mohicans, The.....	136- 3	34.5
Art of Thinking, The.....	186- 3	34.0
Tragic Era, The.....	115- 4	33.0
Moby Dick (original).....	186- 1	32.5
Scarlet Letter, The.....	177- 2	31.0
Story of San Michele, The.....	78- 2	30.0
Poe's Tales.....	111- 1	29.0
Bible.....	87- 2	28.5
Byron.....	98- 4	28.0
Elizabeth and Essex.....	118- 2	28.0
Henry the Eighth.....	175- 2	24.0
Reading and Living, Book III.....	94- 2	24.0
Reading and Living, Book II.....	66- 4	20.0
Reading and Living, Book I.....	84- 3	19.0
Huckleberry Finn.....	93- 1	19.0
Peder Victorious.....	86- 3	18.0
Scarlet Sister Mary.....	81- 1	18.0
Robinson Crusoe (adapted).....	55- 5	18.0
Moby Dick (adapted).....	85- 1	17.0
Cimarron.....	74- 2	16.0
All Quiet on the Western Front.....	119- 2	15.0
White Oaks of Jalna.....	63- 1	15.0
Carl and Anna.....	81- 2	15.0
Angel Pavement.....	143- 2	14.5
Silas Marner (adapted).....	36- 3	14.0
Roper's Row.....	66- 1	12.0
Composite median.....		24.0
Q.....		7.7

latter is a leisurely, autobiographical tale of two centuries ago. Further analysis of these books shows that the former contains not only a high percentage of simple sentences but more than



8 per cent of fragmentary sentences. In *Robinson Crusoe*, on the other hand, the latter kind of sentence is wholly lacking.

TABLE LIII

PERCENTAGE OF SIMPLE SENTENCES IN THE READING MATERIAL  
OF TWENTY-NINE BOOKS

Book	Percentage of Simple Sentences
Cimarron.....	55.5
Carl and Anna.....	52.5
Moby Dick (adapted).....	51.0
Roper's Row.....	51.0
All Quiet on the Western Front.....	46.5
Silas Marner (adapted).....	46.0
Byron.....	43.5
Reading and Living, Book II.....	43.5
Reading and Living, Book I.....	40.5
Henry the Eighth.....	40.0
Tragic Era, The.....	40.0
Art of Thinking, The.....	39.0
White Oaks of Jalna.....	39.0
Scarlet Sister Mary.....	37.5
Reading and Living, Book III.....	37.0
Story of San Michele, The.....	35.5
Huckleberry Finn.....	34.5
Angel Pavement.....	33.5
Peder Victorious.....	33.0
Robinson Crusoe (adapted).....	32.0
Poe's Tales.....	30.5
Scarlet Letter, The.....	29.0
Elizabeth and Essex.....	28.5
Moby Dick (original).....	27.0
Preface to Morals, A.....	23.5
Last of the Mohicans, The.....	20.0
Holy Bible.....	18.0
Silas Marner (original).....	14.0
Robinson Crusoe (original).....	4.0
Mean.....	35.4 ± 1.46
S.D.....	11.7 ± 1.03

Over 50 per cent are long, loosely constructed, compound-complex sentences.

The average percentage of simple sentences for all twenty-nine books is approximately the same as for *Reading and Living*, Book III. It is apparent, therefore, that "average" books, as defined by sentence-structure, namely, *The Story of San Michele*, *Scarlet Sister Mary*, *Angel Pavement*, *Peder Victorious*, and *White Oaks of Jalna*, tend to utilize a complexity of expression about equivalent to that of a sixth-grade text in reading. As in earlier classifications, popular novels, with some exceptions, generally comprise the "average" group. This indicates that their writers avoid extremes of simplicity or complexity with respect to certain significant elements of expression. Inasmuch as writers of popular informational books use a percentage of simple sentences but slightly below the mean, we should probably not accept too readily the notion that simple sentences are best adapted to simple ideas. Obviously, difficult ideas may be expressed in fairly simple sentences, as popular writers of non-fiction exemplify. Conversely, relatively simple ideas may be expressed in such involved sentences as we find in *The Last of the Mohicans*, the *Bible*, the original *Moby Dick*, *Silas Marner*, and *Robinson Crusoe*.

#### COMPOSITE CLASSIFICATION OF BOOKS FOR RELATIVE DIFFICULTY

What is the agreement represented by all these facts pertaining to the relative difficulty of the books studied when difficulty is defined by isolated elements? What contribution can be made by analyzing the books for other elements of difficulty?

Table LIV brings together all the available evidence bearing on these two questions. It shows the relative difficulty of books as revealed by the analysis of the four elements just presented and by the additional analysis of four other elements. The first four are, again, percentage of monosyllables, percentage of different words, syllabic sentence-length, and percentage of simple sentences. The other four are number of different hard words, percentage of easy words, number of personal pronouns, and

number of prepositional phrases. Details of the supplementary analysis for the occurrence of the last four elements have not been included in this report.

TABLE LIV  
BOOKS DEFINED AS RELATIVELY "EASY," "AVERAGE," OR "DIFFICULT" BY THE OCCURRENCE OF EIGHT ELEMENTS OF DIFFICULTY

Easy	Average	Difficult
Robinson Crusoe (adapted) Silas Marner (adapted) Carl and Anna Reading and Living, Book I	Angel Pavement Bible Byron Cimarron Moby Dick (original) Scarlet Sister Mary All Quiet on the Western Front Roper's Row Peder Victorious White Oaks of Jalna Reading and Living, Book III	Art of Thinking, The Elizabeth and Essex Last of Mohicans, The Preface to Morals, A Tragic Era, The

#### SUMMARY

The aim of this chapter was to analyze adult magazines, newspapers, and books for the purpose of determining differences among reading materials of a class with respect to certain elements which indicate their relative ease or difficulty. The analysis was directed toward a study of four significant elements: percentage of monosyllables, percentage of different words, syllabic length of sentences, and percentage of simple sentences.

In interpreting results of the analysis, we have designated certain materials as "average," "easy," or "difficult." A magazine of average difficulty, for example, is one in which the occurrence of a particular element approximates the mean occurrence of that element for the sixty-eight magazines studied. Deviations from the mean in the direction of simplicity or complexity mark other materials as easy or difficult respectively.

Inasmuch as this designation of materials as "easy" or "difficult" is purely relative, it is clear that a particular magazine, for example, may be ranked as "easy" when compared with certain other magazines, yet be ranked "difficult" when compared with still others. Hence, we cannot say that *House and Garden* is a difficult magazine, except in comparison with other of the sixty-eight general magazines studied. Neither can we say that the *Los Angeles Times* is a difficult newspaper nor *Elizabeth and Essex* a difficult book, save as we compare each with other materials of its class. Unquestionably, the classification of *House and Garden* as difficult is more reliable than a similar classification of the *Los Angeles Times* and *Elizabeth and Essex*, for the reason that general magazines received a far more comprehensive sampling than newspapers and books.

The facts presented in this chapter, then, do not define difficulty of reading materials precisely. They show, rather, how differences in the occurrence of certain elements in several materials of a class warrant the conclusion that one book is easier or more difficult than others with which it is compared. Furthermore, they show that differences which persist among different reading materials with respect to significant elements are so apparent as to suggest the need of a more precise technique of defining the degree of ease or difficulty of specific books, magazines, and newspapers. Such a technique involving a more extensive sampling and the use of a larger number of elements has been presented on pages 134-138 of the previous chapter. The task of applying that technique to particular reading materials is described in the next chapter.

## CHAPTER VI

### WHAT IS THE DIFFICULTY OF ADULT READING MATERIALS?

**P**RECISELY how difficult are adult reading materials of a general nature, when difficulty is expressed in terms of a numerical index? If they differ widely (and we have shown that they do) with respect to certain inherent elements which mark them as relatively easy or difficult, what are the limits of difficulty represented by them? At what point along the scale of difficulty can we say that a book is "very easy" and not just "easy," or "very difficult" rather than "difficult?" And at what point is a book to be considered of "average" difficulty? Having defined areas of difficulty numerically, how are we to interpret them? That is to say, if the index of difficulty of *New Russia's Primer*, for example, shows that it is "easy," what does this mean? Is an easy book about equal in difficulty to a book for second grade, for fourth grade, or for eighth grade?

The foregoing questions arise as one surveys adult reading materials and compares the occurrence of elements of difficulty contained therein, as we have done in chapter v. The importance of these questions cannot be overemphasized. If we are to utilize most profitably the materials now available, it is evident that the difficulty of each must be defined precisely. This cannot be accomplished merely by showing, as we have done in chapter v, that a certain book contains as many elements of difficulty as this one or that one, but by determining its index of difficulty and thereby defining the area of difficulty to which it belongs.

In order to answer these questions, two sets of facts are needed. First, facts should be discovered that can be used in defining both the scale of difficulty represented by a wide sampling of adult materials and the various areas of difficulty into which the

entire scale can be divided. Second, facts are needed that can be used in interpreting each area of difficulty in practical terms. Obtaining these different kinds of information involves the selection of a wide sampling of reading material, the calculation of an index of difficulty for each of the materials selected, and the distribution of the indexes in a manner that will make them meaningful and useful. The present chapter shows how these procedures have been carried out and the facts thus obtained used in answering the questions presented at its beginning.

#### LIMITATION OF ADULT MATERIALS TO GENERAL BOOKS

In this part of the study which defines areas of difficulty for adult reading materials, we have centered our attention on books to the exclusion of magazines and newspapers. The reasons for doing so are given in chapter v. An examination of Tables XXXVII-XL shows that the range of occurrence of the four elements studied is wider for adult books than for adult magazines and newspapers. Presumably, a similar variation in range persists with respect to other significant elements. If, then, we define areas of difficulty for a wide sampling of adult books, we may expect to include a range as wide as that represented by adult materials in general, that is, by books, magazines, and newspapers.

#### ADULT BOOKS STUDIED

In selecting books for study, we have endeavored to obtain a sampling that represents a range of difficulty for adults of limited reading ability from very easy to very difficult. Such a range extends from an area of difficulty exemplified by the simplified *Robinson Crusoe*, through an area characterized by the novels of Zane Grey, Harold Bell Wright, and other writers of popular fiction, to an area represented by Boswell's *Life of Johnson*. The books studied were suggested by the following sources:

1. The largest number were taken from a compilation prepared to meet the demand for a list of simply written, informa-

tive, readable books suitable for use in connection with current educational activities among adults.<sup>2</sup> The list includes books of fiction, biography, history, and travel; books about cooking, gardening, dress making, and other practical arts; and books on music, drawing, painting, writing, the theater, and other subjects bearing on the cultural aspects of living.

2. A considerable number were suggested by forty readers' advisers in public libraries in various parts of the country. They kept a month's record of the reading carried on by adult patrons who came for guidance and evaluated the readability of the books they read by the technique described in chapter ii.

3. Data compiled by Waples and Tyler furnished the names of cheap, simply written novels which represent the undirected reading choices of adults of low reading abilities and relatively untutored tastes.

4. The findings obtained by Chancellor from an inquiry concerning available reading materials for native-born illiterates and near-illiterates indicate the books of greatest usefulness for adult beginners in reading. These books were also included in the list studied.

Many books were found to be common to two or more lists. Others appear on but one list. Several had been analyzed and ranked for relative difficulty after the manner described in chapter v. No book was omitted from the study, however, if it could be located in public or private libraries. In all, 350 suggested books were available. Their indexes of difficulty were predicted and used in defining areas of difficulty for adult reading matter in general. The names of these books, together with author, publisher, and date of publication, are listed in Table LXXXV in Appendix F.

#### PREDICTING DIFFICULTY IN TERMS OF AN AVERAGE READING SCORE

The method used to determine difficulty in terms of a numerical index, or an average reading score, has been described on

<sup>2</sup> Doris Hoyt, *Books of General Interest for Today's Readers*. Washington, D.C., American Library Association and the American Association for Adult Education, 1934. Pp. 60.

pages 134-135 of chapter iv. This method enables us to combine several elements of difficulty into a single value,  $X_1$ , in such a way as to give the best possible estimate of  $X_1$ . Here  $X_1$  is the average reading score that adults of limited reading ability might be expected to make were they tested for comprehension of a given book. In other words, it is the index of difficulty which we are trying to determine.

In chapter iv we have shown how eight significant elements may be combined into a variety of smaller groupings for the purpose of predicting difficulty. Any one of the combinations presented gives a fairly reliable prediction of difficulty. For purposes of this part of the study, we have combined five elements—number of different hard words, number of personal pronouns, average sentence-length in words, percentage of different words, and number of prepositional phrases—into a single instrument of prediction, as shown on page 138. The final index is a true measure of difficulty only to the extent that the five elements represent total difficulty.

The procedure followed in using these elements for predicting the index of difficulty for a particular book is, first, to select a passage of one hundred words from approximately each chapter; second, to analyze the passage for the occurrence of the five elements of difficulty; third, to calculate the average occurrence of each element for the book as a whole; fourth, to substitute the obtained values in respective order in the following equation:

$$X_1 = -.01029X_2 + .009012X_3 - .02094X_4 - .03313X_5 \\ - .01485X_6 + 3.774;$$

and, finally, to solve the equation for  $X_1$ , the average score in comprehension that a group of adults of limited ability probably would make if tested on the content of the book. Each step in the procedure requires painstaking care in order that the score thus obtained will be as accurate and reliable as possible.

A summary of data obtained by analyzing various samples of a book for the occurrence of specific elements is necessary before the average occurrence of each element can be determined for the book as a whole. It seems desirable to keep a record of this



summary, together with other data used in calculating an index of difficulty for a particular book. Such a record may be used

TABLE LV

FORM USED IN RECORDING THE OCCURRENCE OF ELEMENTS OF DIFFICULTY AND  
THE CALCULATION OF THE AVERAGE READING SCORE

Title	MAKING THE MOST OF YOUR LOOKS											
Author	Dorothy Stote						Publisher	Brentano's, New York, 1926				
Total Number of Pages	313						Net Number of Pages	3-312				
Figured by	W. D.						Checked by	B. E. L.				
Chapter	I	II	IV	V	VI	VIII	X	XII	XIV	XVI	XIX	
Page	7	33	62	92	121	153	186- 187	211	242	271	305	
	Occurrence of Elements											Average for Book
Number of different hard words ( $X_1$ )	17	22	22	18	26	20	19	20	21	21	26	21.09
Number of first-, second-, third-person pronouns ( $X_2$ )	9	13	6	9	1	6	17	11	10	8	20	10.00
Average sentence-length in words ( $X_3$ )	20	14.2	20	33.3	12.5	20	11.1	25	25	25	16.7	20.26
Percentage of different words ( $X_4$ )	64	67	66	68	69	69	63	72	61	69	64	66.55
Number of prepositional phrases ( $X_5$ )	3	5	5	9	5	16	6	12	13	10	12	8.727

later as a source of reference concerning the difficulty of a given book, and as a means of verifying an obtained score.

Table LV is a copy of the record-card used in the present

TABLE LV—*Continued*Formula  $X_1 = -.01029 X_2 + .009012 X_3 - .02094 X_4 - .03313 X_7 - .01485 X_8 + 3.774$ 

(1) Number of personal pronouns.....	$\times .009012 =$	<u>.090120</u>
	+	<u>3.774</u>
	Sum =	<u>3.864120</u>
(2) Number of different hard words.....	$\times .01029 =$	<u>-.217016</u>
	Difference =	<u>3.647104</u>
(3) Average sentence-length in words.....	$\times .02094 =$	<u>-.424244</u>
	Difference =	<u>3.222860</u>
(4) Percentage of different words.....	$\times .03313 =$	<u>-2.204802</u>
	Difference =	<u>1.018058</u>
(5) Number of prepositional phrases.....	$\times .01485 =$	<u>-.129596</u>
Final difference = Average reading score =		<u>.89</u>

study. It shows the occurrence of elements of difficulty in Stote's *Making the Most of Your Looks*,<sup>2</sup> and the calculation of the predicted score, .89. Each vertical column shows the occurrence of the five elements in a single sampling of one hundred words. The general location of the sample by chapter and page is indicated at the top of the column. Each horizontal row shows the occurrence of a single element in the complete series of samplings. At the end of each row is recorded the average occurrence of the element for the entire book. Space is provided on the card for fifteen samplings, the maximum number usually needed.

The steps followed in calculating the index of difficulty are indicated below the tabulated elements. For the sake of ease of computation, elements with positive coefficients are considered first. The product of  $+.009012X_3$ , representing the weighted value of personal pronouns, is added to the statistical constant, 3.774. From the positive sum thus obtained are subtracted succeeding products representing, respectively, the weighted value of different hard words, sentence-length, different words, and prepositional phrases. The final difference designates the average reading score or predicted index of difficulty. If these cal-

<sup>2</sup> Dorothy Stote, *Making the Most of Your Looks*. New York, Brentano's, 1926. Pp. 313.

culations are made through the use of a calculating machine, the process can be carried forward continuously, each answer being kept in the machine until the final difference is obtained. It is usually desirable, however, to record the successive answers, as in Table LV, for the purpose of checking on the accuracy of the predicted score.

#### RANGE OF DIFFICULTY REPRESENTED BY 350 BOOKS

The distribution of reading scores predicted for the 350 books studied is presented in Table LVI. Each interval begins with the first number and extends up to, but not including, the second number. For example, interval .10-.15 includes all books with a predicted score of .10 or more up to .15. Actually, the end-point of this interval is .145, any score exceeding .145 being interpreted as .15 and, accordingly, included in the next interval .15-.20.

The range of difficulty extends from 2.06, the score for the adapted *Robinson Crusoe*, to -.26, for the original *Robinson Crusoe*. The former book is, therefore, the easiest book studied and the latter the hardest, when difficulty is measured in terms of structural elements. Since the highest score made by "poorest" readers, whose performance on the adult tests was described in chapter iv, was 2.1, it is evident that the adapted version of *Robinson Crusoe* will probably be read with a fair degree of comprehension by all adults of limited reading ability. On the other hand, it is unlikely that any reader of the same ability will obtain a similar understanding of the original version.

The mean score for all books is .676. This score is representative of the difficulty of *Jalna*, *Twelve Tests of Character*, *Richard Carvel*, and *Rockne of Notre Dame*. The standard deviation, .257, indicates that approximately the middle two-thirds of all books studied have a degree of difficulty varying from .933 (.676+.257) to .419 (.676-.257). In other words, about 233 books range between Zane Grey's *Riders of the Purple Sage* (.933) and Ludwig's *July '14* (.420).

Further examination of the distributed scores shows that the number of books in each class-interval increases with conspicuous regularity from interval 1.30-1.35 to interval .65-.70, and decreases from the latter point with approximately the same

TABLE LVI

DISTRIBUTION OF AVERAGE READING SCORES PREDICTED FOR 350 BOOKS

Predicted Scores	Number	Predicted Scores	Number
2.05-2.10.....	1	.80-.85.....	21
2.00-2.05.....		.75-.80.....	23
1.95-2.00.....		.70-.75.....	33
1.90-1.95.....		.65-.70.....	40
1.85-1.90.....		.60-.65.....	30
1.80-1.85.....	1	.55-.60.....	28
1.75-1.80.....		.50-.55.....	21
1.70-1.75.....		.45-.50.....	14
1.65-1.70.....		.40-.45.....	19
1.60-1.65.....		.35-.40.....	7
1.55-1.60.....	1	.30-.35.....	9
1.50-1.55.....		.25-.30.....	7
1.45-1.50.....		.20-.25.....	5
1.40-1.45.....		.15-.20.....	6
1.35-1.40.....		.10-.15.....	3
1.30-1.35.....	1	.05-.10.....	2
1.25-1.30.....		.00-.05.....	1
1.20-1.25.....	3	-.05-.00.....	
1.15-1.20.....	3	-.10-.05.....	
1.10-1.15.....	4	-.15-.10.....	
1.05-1.10.....	5	-.20-.15.....	
1.00-1.05.....	6	-.25-.20.....	
.95-1.00.....	10	-.30-.25.....	1
.90-.95.....	17		
.85-.90.....	28		
		Total.....	350

Mean.....  $.676 \pm .093$ S.D.....  $.257 \pm .066$ 

consistency to interval .00-.05. The number of books at the extremes of the scale is limited to a scattered few. What these facts seem to indicate is that many more books of average difficulty are to be found in a sampling of adult materials than are easy or difficult books when the sampling is made as in this study.

The distribution of books according to difficulty may be observed more directly by means of the graphic presentation of scores shown in Figure 23. Numbers below the base-line show the class-intervals into which the predicted scores have been distributed. High scores, representative of easy books, appear at what is commonly termed the "low" end of scale, and low scores, representative of difficult books, at the "high" end of the scale. Hence, difficulty progresses from left to right, from high to low scores.

It is at once apparent that the diagram has the same general form as the normal curve. That is to say, we find relatively few measures at the low end of the scale, an increasing number up to a maximum at the mid-position, and a progressive falling-off as we go toward the high end of the scale. If we divide the area by a line drawn perpendicularly through the highest point to the base-line, the two parts will be markedly similar in form. Were the distribution perfectly symmetrical, it would show perfect bilateral symmetry, that is, its halves would be similar in form and equal in area. As will be shown later, it is significant for our purposes that the distribution bears such a close resemblance to normality.

Examination of the diagram shows that some class-intervals have been omitted at the two extremes. Beyond interval 1.30-1.35 at one extreme and .00-.05 at the other, the base-line has been shortened to include only those intervals in which frequencies occur. Consequently, three easy books and one difficult book are drawn into the distribution more closely than their scores actually warrant.

Each block on the diagram represents a book designated by a number which corresponds to the numerical order of the book in Table LXXXV, Appendix F. Hence, it is possible to compare the difficulty of any one book with any other or with all others, by identifying it on Figure 23. For the sake of illustration, let us assume that we wish to compare Mark Twain's *Tom Sawyer* with Booth Tarkington's *Penrod* and that we wish further to compare both books with others along the scale. Their indexes

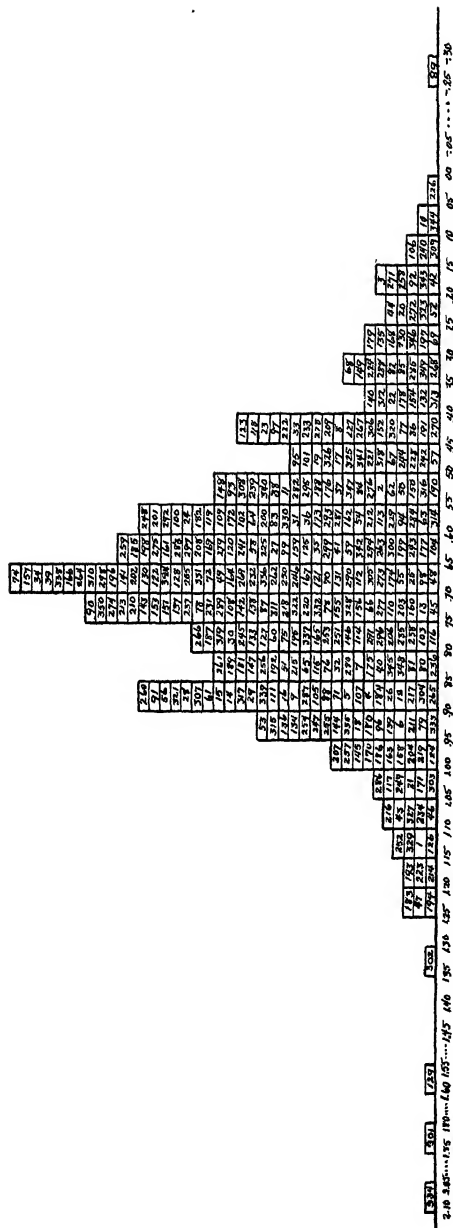


FIG. 23.—Average reading scores or indexes of difficulty predicted for 350 general adult books

of difficulty, as shown in Table LXXXV, are, respectively, .86 and .71. Their positions on the diagram are indicated by numbers 321 and 311. It is evident that the difference in difficulty between the two books is approximately equivalent to two class-intervals, the former occupying the lower position on the scale. It is equally evident that both books are easier than the majority of books studied, when difficulty is measured in terms of structural elements.

Again, suppose we wish to determine how much variation in difficulty has been affected by Robert Graves in his condensation of the original version of *David Copperfield*. In terms of a numerical index, the difficulty has been reduced from .16 to .85, shown on the diagram as equivalent to the difference between numbers 92 and 91. It is clear that Graves has made from a very difficult novel one notably easier than most of the adult books studied.

As a final illustration, let us compare the difficulty of three books by a single author—*Cimarron*, *Fanny Herself*, and *Show Boat*, by Edna Ferber. They are designated, respectively, in Figure 23 by numbers 114, 115, and 116. As can readily be observed, the difficulty of the three books is practically identical, when measured by structural elements. While it is true that *Fanny Herself* has a slightly lower position on the scale, its absolute index of difficulty, .82, is not significantly different from .78, the index for *Cimarron*, or .79, for *Show Boat*. Although there is some reason for concluding from these facts that the author has adopted a style of writing which represents a consistent level of average difficulty, further evidence is needed before such a generalization is altogether warranted.

#### DEFINING AREAS OF DIFFICULTY

Having predicted the difficulty of 350 books and distributed the scores, as in Table LVI and Figure 23, we are next concerned with the problem of determining objectively certain areas of difficulty by means of which the difficulty of a particular book can be interpreted in everyday language. When its absolute

difficulty has been predicted, we can then tell in what area of difficulty the book rightfully belongs in relation to adult books in general.

In the previous chapter we adopted arbitrarily three areas—"easy," "average," and "difficult." But such areas tend to be very broad. They do not allow fine discriminations of difficulty. Of two easy books, one may be notably easier than the other. Similarly, two difficult books may represent quite different degrees of hardness. It seems desirable, therefore, to define five areas of difficulty designated "very easy," "easy," "average," "difficult," and "very difficult." Our problem, then, is to classify the 350 books studied into these five areas of difficulty in such a way that the range of difficulty is equal in each.

Inasmuch as our solution of the problem involves the use of the normal curve, probably the simplest approach is through further consideration of Figure 23. The essential characteristics of this diagram and its similarity to the normal curve have already been noted. Although the distribution departs somewhat from normal symmetry, the amount of its irregularity, or "skewness," is small. When the degree of skewness is stated numerically, it has a value of  $-.023$ , which is interpreted as a slightly negative skewness.<sup>3</sup> In other words, the scores show a slight tendency to mass at the high end of the scale, indicated on the diagram by low scores. When described in terms of various measures of central tendency, the amount of irregularity is again insignificant. The values of the mean, median, and mode, which are equal in a normal distribution, are, respectively, .676, .678, and .675.

If we accept this distribution of scores as sufficiently normal to justify statistical treatment upon the assumption of normality, how can we make use of it in defining areas of difficulty? Before answering this question we must further assume that

<sup>3</sup> The approximate measure of skewness is found by the formula:

$$S_k = 3 \frac{(M - Md)}{\sigma}.$$



the distribution is sufficiently true to the facts concerning the difficulty of adult books in general to make its use valid in defining areas that will be applicable generally. In other words, we must assume that a prediction of difficulty for all adult books now available would give a series of scores whose distribution would tend to bunch in the middle and taper off gradually toward the extreme in a manner approximately parallel with a normal curve. If we multiplied our 350-book sampling many times, and if we extended the content of the sampling to include books for all classes of readers, we would presumably discover that the general shape of the distributed scores would remain the same. The present difficult and very difficult books would be drawn closer into the distribution along with many more of their class, and a new type of difficult book would represent the upper extreme of the distribution.

While theoretically the normal curve meets the base-line at infinite distances to the right and left of the mean, for practical purposes the curve may be taken to end at points three standard deviations above and below the mean. In other words, the curve covers a range of  $6\sigma$  extending from  $+3\sigma$  to  $-3\sigma$ . Statistical evidence has shown that in a total of 10,000 cases, 99.73 per cent fall within the limits set by  $+3\sigma$  and  $-3\sigma$ .<sup>4</sup> Hence, by cutting off the curve at these two points, we disregard only .27 of 1 per cent of the distribution, an amount obviously negligible in very large samples.

If the base-line of the distribution is taken to extend from  $+3\sigma$  to  $-3\sigma$ —that is, over a range of  $6\sigma$ —our problem becomes simply a matter of defining five areas in terms of  $6\sigma$ . By simple division, we get  $1.2\sigma$  as the extent along the base-line allotted to each area. These five intervals may be laid off along the base-line, as in Figure 24, and perpendiculars drawn to demarcate the five areas, *A*, *B*, *C*, *D*, and *E*. It is clear that very easy books (*A*) cover the first  $1.2\sigma$ ; easy books (*B*) the next  $1.2\sigma$ ; that average books (*C*) include  $.6\sigma$  to the left and  $.6\sigma$  to the right of the mean, which is designated on the diagram *O*; and that difficult

<sup>4</sup>Holzinger, *op. cit.*, pp. 113-14; 210-11.

books (*D*) and very difficult books (*E*) occupy the same relative positions to the right of *C* as *B* and *A* occupy to the left.

What do these areas mean in terms of average reading scores? If we obtain the average score, or index of difficulty, for a particular book, how can we tell in which area it belongs? It will be remembered that the standard deviation ( $\sigma$ ) has been indicated in Table LVI as .257. An area of  $1.2\sigma$ , then, covers a range  $1.2$  times .257 or .31. Knowing the mean score of the dis-

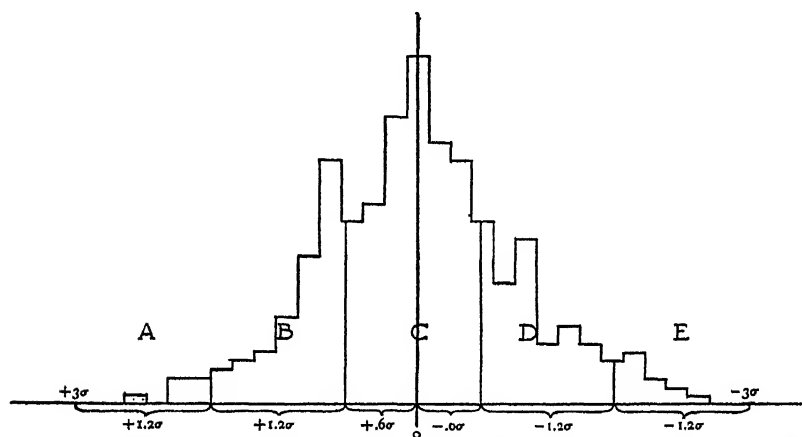


FIG. 24.—Definition of five areas of difficulty represented by the adult books studied

tribution, .676, we can define the range of scores in each area on both sides of the mean. Area C, extending  $.6\sigma$  above and below the mean, includes a range of scores indicated by  $.676 \pm .6\sigma$ , or from .53 to .84. Area B includes scores from .84 to 1.15; and Area A, from 1.15 to 1.46 and beyond. In the opposite direction from the mean, Area D includes scores from .22 to .53; and Area E, from  $-.09$ , or below, to .22.

With these areas defined, we can now say that Roosevelt's *Looking Forward* is a book of average difficulty, for the reason that its predicted index of difficulty, .70, falls in Area C. *School and Home*, by Angelo Patri, score 1.11, is an easy book; and the adapted *Silas Marner*, score 1.24, very easy. On the other hand, Robinson's *The Mind in the Making*, score .43, belongs to the

area of difficult books; and Adam's *The Epic of America*, score .15, to the area of very difficult books.

It must be remembered that the assignment of these books to their respective categories is based solely on a consideration of one measure of difficulty, the occurrence of structural elements bearing significant relationship to difficulty for adults of limited ability. Unquestionably, other qualities—such as informality of style, directness of presentation, and interestingness of content—may impose a limitation on how far structural elements alone can truly determine the difficulty of a particular book. To what extent a more valid means of classifying books for difficulty can be effected by a consideration of additional qualities is a problem which requires further experimentation. In the sections which follow, it is most essential that these limitations be kept in mind.

#### IS THE DIFFERENCE IN DIFFICULTY REPRESENTED BY ADJACENT AREAS SIGNIFICANT?

If we look at this question from a statistical point of view, the answer is "yes." The significance of the difference between the average scores of any two books was determined from the probable error of the difference of the scores, which was found to be .079. Since a significant difference is usually considered at least three times its probable error, a difference of .24 between scores on any two books may be considered statistically significant. It is evident, therefore, that the end-score of Area C, .53, for example, is significantly different from the opposite end-score, .84, and hence from Area B. On the other hand, the difficulty of the section of Area C bordering .84 is imperceptibly different from the section of Area B bordering the same score. In more concrete terms, *The Silver Horde*, by Rex Beach, score .82, is significantly easier than *A Daughter of the Seine* by Eaton, score .55, at the opposite extreme of Area C. The difficulty of the former is approximately the same, however, as Carroll's *As the Earth Turns*, whose score of .86 ranks it in Area B; whereas the difficulty of the latter approximates Sandburg's *Mary*

*Lincoln*, whose score of .52 ranks it in Area D. In view of these facts, we may say that an area of  $1.2\sigma$ , covering a score-range of .31, represents a degree of difficulty significantly different in general from any other area. Neither of its extremes, however, is significantly different from the extreme of the area adjacent to it.

From a practical point of view, the question of significant differences in difficulty can be answered with considerably less certainty. For the beginning adult reader, it seems safe to say that a difference in scores of less than the statistical minimum .24 may be significant. He may be able to read *Country Life Reader*, Book II, score 1.33, with fair understanding, yet experience genuine difficulty with *Fundamentals of Dress Construction*, score 1.19. His limited reading experience puts him in the class of "poor" readers, for whom structural elements, as shown in chapter iv, are notably more closely related to difficulty than for "good" readers. For the latter type, that is, for the person with mature reading habits, the ranking of a book as "easy," "average," or "difficult" is relatively unimportant. From the point of view of structure, probably no general book is so difficult that he cannot read it, should he choose to do so. Whether he will choose to read a very difficult, an average, or an easy book is another matter.

#### WHAT BOOKS CHARACTERIZE AREAS A, B, C, D, AND E?

In characterizing areas of structural difficulty in terms of specific books, we have attempted to select from among the 350 books studied those which are familiar to a large number of readers of this report. With each book cited in this section are given its index of difficulty, or predicted score, listed in Table LXXXV, Appendix F, and its numerical order in that table by which it may be identified in Figure 23.

Of the 350 books studied, 10 belong to Area A. In other words, their index of difficulty is higher than 1.15, giving them lowest rank along the scale of difficulty. Two types of books were found to fall in this area of very easy reading. One type

includes simplified materials prepared especially for beginning adult readers and near-illiterates. The other includes simple books on practical subjects written to reach a large reading audience. Among the former are the *Country Life Readers*, Books I and II, numbered, respectively, 301 and 302; *Home and Health in a New Land* (No. 129); and adaptations of *Silas Marner* (No. 194) and *Robinson Crusoe* (No. 334). The scores of these books range between 1.24 and 2.06, indicating that adults of limited ability can probably read them with a fair degree of understanding. Very easy books on practical subjects include Brigham's *Box Furniture* (No. 47), score 1.24; Manning and Donaldson's *Fundamentals of Dress Construction* (No. 214), score 1.19; and *Maternity Handbook* (No. 223), score 1.16.

Area B extends from *Farm Blacksmithing*, by Friese (No. 126), to the condensed edition of *David Copperfield* (No. 91). The predicted score of the former is 1.13; of the latter, .85. Despite the fact that both belong to the area of easy books, the one is about as closely related to the hardest of very easy books as the other is to the easiest of average books. Among the 70 easy books are found *School and Home*, by Angelo Patri (No. 252), score 1.11; Ilin's *What Time Is It?* (No. 171), score 1.04; and *New Russia's Primer* (No. 170), score .97. More books on practical subjects—making of draperies, growing house plants, caring for the home, designing furniture, repairing shoes—are among the books which adults of limited ability presumably find easy. A few popular novels rank in this area. Conspicuous among them are Zane Grey's *Riders of the Purple Sage* (No. 139); *A Lantern in Her Hand*, by Bess Streeter Aldrich (No. 9); and *The Bonney Family*, by Ruth Suckow (No. 858). The score of the first is .92; of the other two, .86. This latter score is representative also of Mark Twain's *The Adventures of Tom Sawyer* (No. 321), and Mary Antin's *The Promised Land* (No. 16).

In Area C, extending from score .53 to score .84, popular novels and popularly written general non-fiction predominate. Here we find a variety of good stories, both old and new: Dumas, *The Three Musketeers* (No. 98); Tracy, *Wings of the*

*Morning* (No. 316); De La Roche, *Jalna* (No. 269); London, *The Call of the Wild* (No. 203); Ferber, *Cimarron* (No. 114), *Fanny Herself* (No. 115), and *Show Boat* (No. 116); Lewis, *Babbitt* (No. 196); Bromfield, *The Green Bay Tree* (No. 48); Deeping, *Sorrell and Son* (No. 87); Buck, *The Good Earth* (No. 51); O. Henry, *Four Million* (No. 151); Heyward, *Mamba's Daughters* (No. 157); Wharton, *Ethan Frome* (No. 336); Hough, *The Covered Wagon* (No. 165), and many other stories. They represent adventure, mystery, family life, and characterization. They are stories of the North, East, South, West, and Middle West. In one respect these stories are all similar. They are told in a manner which from the point of view of structural elements marks them of average difficulty among adult books in general.

In this "average" area, too, we find a generous amount of biography: Lindbergh, *We* (No. 199); White, *Daniel Boone* (No. 337); Finger, *David Livingstone* (No. 112); Partridge, *Amundsen, the Splendid Norseman* (No. 251); Repplier, *Père Marquette* (No. 262); Sandburg, *Abe Lincoln Grows Up* (No. 281); Lovelace, *Rockne of Notre Dame* (No. 205); Cantor, *My Life Is in Your Hands* (No. 59); Barrymore, *Confessions of an Actor* (No. 27); Winkler, *John D: A Portrait in Oil* (No. 342); and Earhart, *The Fun of It* (No. 99). These few titles by no means exhaust the list of interesting life-stories of interesting people, told by themselves or by others in such a way that readers of limited ability may be expected to find them of average difficulty.

Books on sports generally rank in Area C. That is, their predicted index of difficulty falls between .53 and .84. Among such books we find: Barnes, *Swimming and Diving* (No. 24); Moore, *The Mental Side of Golf* (No. 237); Hulit, *The Salt-Water Angler* (No. 169); Hammett, *Major Sport Fundamentals* (No. 143); and Lacoste on *Tennis* (No. 189).

A more restricted number of books of history rank in Area C. History in general is represented by Parson, *The Stream of History* (No. 250); Hartman, *These United States* (No. 146); Herd-

man, *History of the United States* (No. 153); and Singmaster, *The Book of the United States* (290). Accounts of the World War include Remarque, *All Quiet on the Western Front* (No. 261); and Masefield, *Gallipoli* (No. 220). Books of history, in general, do not fall among "average" books. They tend, rather, to belong to Area D, which represents what we have termed "difficult" reading materials.

In Area D, extending from score .22 to score .53, are included 69 books which from the point of view of structure are probably too difficult for adults of limited ability to comprehend satisfactorily. This does not mean that so-called "difficult" books cannot be read understandingly by some relatively inexperienced readers. Undoubtedly they can and for the reason that other factors may offset structural difficulty. For example, a book of compelling interest with an index of difficulty of .35 may be more intelligible than another with an index of .68. In general, however, Area D is characterized by books of a level of difficulty too advanced for readers of limited ability.

Few novels among the 350 books studied rank in Area D. These few are representative of the more substantial type of fiction—novels of the Victorian Era, ponderous novels equal to two or three of ordinary length, and European novels in translation. Among them we find: Austen, *Pride and Prejudice* (No. 19); Goldsmith, *The Vicar of Wakefield* (No. 135); Turgenev, *Fathers and Sons* (No. 320); Rolland, *Jean-Christophe* (No. 272); Balzac, *Père Goriot* (No. 22); and Daudet, *Tartarin of Tarascon and Tartarin on the Alps* (No. 86).

Like fiction, biography is represented relatively little in Area D. Illustrative of difficult biography are: McMahon, *Wright Brothers* (No. 228); Anderson, *These Quarrelsome Bonapartes* (No. 11); and Arliss, *Up the Years from Bloomsbury* (No. 17).

What sort of books, then, best characterize Area D? Two kinds rank most frequently as difficult reading. They are books of travel and books of history. The former include: Mason, *Columbus Came Late* (No. 222); Leys, *After You, Magellan!* (No. 197); *Van Loon's Geography* (No. 326); Duguid, *Green Hell* (No.

97); Woolley, *Ur of the Chaldees* (No. 346); Morton, *In Search of Scotland* (No. 239); and Banks, *The Story of Mexico* (No. 23). Difficult books of history are represented by Davis, *Life in Elizabethan Days* (No. 85); Ludwig, *July '14* (No. 209); Gibbs, *Since Then* (No. 132); Lang, *The Conquest of Montezuma's Empire* (No. 191); and Maurois, *Disraeli* (No. 224). That travel and history should present difficult reading for the limited reader is not wholly unexpected. Much of the difficulty can undoubtedly be ascribed to the frequent occurrence of proper words which tend to weight the vocabulary with hard words.

Thirteen of the 350 books studied have an index of difficulty below .22. They are the very difficult books which represent Area E. Among them we find: Allen, *Only Yesterday* (No. 10); Mowrer, *Germany Puts the Clock Back* (No. 240); Adams, *The Epic of America* (No. 3); Rogers and Allen, *The American Procession* (No. 271); Sullivan, *Our Times, 1900-1914* (No. 308); and Bowers, *The Tragic Era* (No. 42). Curiously enough, these "very difficult" books deal with subjects of wide appeal. They present some vital problem of present-day living or some aspect of an earlier period that has made appreciable contribution to our times. They are written in a vivid, narrative style that is easy and agreeable for the able reader. Yet from the point of view of structure they present difficulties which put them beyond the understanding of readers of lesser ability. How much this handicap can be overcome by the reader's attitude, the purposiveness of his reading, the attractiveness of the theme, and other potent factors of the reading situation, is a question that cannot be answered. Undoubtedly, such factors tend to decrease appreciably the influence of structural elements on difficulty.

#### WHAT DO AREAS OF DIFFICULTY MEAN IN TERMS OF GRADE LEVELS OF READING ABILITY?

More specifically, does Area C represent a degree of difficulty appropriate for grades 4 and 5 as for grades 7 and 8? Can adults



whose reading ability is defined at the sixth-grade level read understandingly difficult books ranked at Area D?

In order to answer these questions precisely we need to find out how well adults of different degrees of reading ability can comprehend materials at Areas A, B, C, D, or E. If by testing their understanding of a variety of materials, we should find that the majority of adults of a given grade comprehend "average" (Area C), but not "difficult" books (Area D), then we might say that materials at Area C are best suited to their level of ability.

A comprehensive testing program, however, meets a number of practical obstacles. In the first place, although a large percentage of adults engage in some reading of a general sort, a relatively small percentage attend organized classes of instruction. Then, too, the few adults who attend day or evening schools are seldom classified formally at a specific grade-level. To interpret areas of difficulty in terms of adult grades of educational progress is, therefore, not only an intricate task but one that is more or less impractical. On the other hand, if we interpret their meaning in terms of elementary grade-levels for which they are structurally appropriate, we shall have an estimate of difficulty that is generally intelligible and presumably practical.

Considerable effort has been centered on determining the appropriate grade-placement of reading material for children. This is largely for the reason that fundamental reading habits show progressive growth throughout the elementary grades until they reach a stage of maturity normally attained by the end of the elementary school. In harmony with these facts, ability in reading has been accepted as a fairly valid index of a child's ability to meet the requirements of a particular grade.

The careful grading of children's reading materials has consequently been essential in order to provide for pupil adjustment at each grade-level and for pupil advancement from one grade-level to the next. Materials have been graded on the basis of such factors as familiarity of vocabulary, length and complexity of thought-statements, number and quality of ideas, and ap-

propriateness of content to the major interests at any given level. As a result, we now find many textbooks for each grade prepared with such care that they suit the reading needs and abilities of the majority of pupils classified in that grade.

In attempting to establish a meaning of difficulty for adult materials in Areas A, B, C, D, and E we have compared the indexes of difficulty represented by each area with the indexes of difficulty of a wide sampling of children's textbooks in reading. It is not our purpose to conclude from such comparisons that the difficulty of adult books in any given area is equivalent to that of children's books at a given grade-level, save with respect to structural elements.

Eighty-one textbooks in reading were chosen for study. Included in this number are eleven series of readers for grades 2 to 6, inclusive, and twenty-six widely used texts in reading and literature for grades 7 and 8 of the elementary school or for grades 7, 8, and 9 of the junior high school. The books are listed in Table LXXXVI, Appendix G, together with the name of author and publisher, and date of publication of each.

The distribution of average reading scores predicted for the eighty-one textbooks for grades 2 to 9 is shown in Table LVII. The range of difficulty extends from 1.60, the score predicted for *The Open Door*, a reading text for second grade, to .16, the score for *Literature and Life*, Book II, a text for eighth grade. The table shows interesting differences between the difficulty of books at successive grade-levels up to the period of the junior high school. These differences are more strikingly presented in Figure 25. On this diagram are shown the range of difficulty among the books for each grade, the average difficulty, and the range of difficulty represented by the middle two-thirds of books studied for each grade.

Up to the eighth grade, books for each grade show an average difficulty that is notably higher than for the one immediately preceding. The average difficulty of books for eighth grade is but slightly higher than for seventh grade, and but slightly lower than for ninth grade. Although there is a degree of over-

lapping in the range of difficulty of books for succeeding grades, it is not until the junior high school that the range of difficulty for one grade closely parallels the range for the next.

TABLE LVII  
DISTRIBUTION OF AVERAGE READING SCORES PREDICTED FOR  
EIGHTY-ONE TEXTBOOKS IN READING

Predicted Scores	All Books	Sec- ond Grade	Third Grade	Fourth Grade	Fifth Grade	Sixth Grade	Sev- enth Grade	Eighth Grade	Ninth Grade
1.60-1.65.....	1	1	.....	.....	.....	.....	.....	.....	.....
1.55-1.60.....	4	4	.....	.....	.....	.....	.....	.....	.....
1.50-1.55.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.45-1.50.....	1	1	.....	.....	.....	.....	.....	.....	.....
1.40-1.45.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.35-1.40.....	2	2	.....	.....	.....	.....	.....	.....	.....
1.30-1.35.....	4	2	2	.....	.....	.....	.....	.....	.....
1.25-1.30.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.20-1.25.....	2	.....	2	.....	.....	.....	.....	.....	.....
1.15-1.20.....	7	.....	4	3	.....	.....	.....	.....	.....
1.10-1.15.....	5	1	2	1	1	.....	.....	.....	.....
1.05-1.10.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1.00-1.05.....	3	.....	1	.....	2	.....	.....	.....	.....
.95-1.00.....	5	.....	.....	3	2	.....	.....	.....	.....
.90-.95.....	6	.....	.....	2	3	1	.....	.....	.....
.85-.90.....	2	.....	.....	1	.....	1	.....	.....	.....
.80-.85.....	5	.....	.....	1	.....	2	1	.....	.....
.75-.80.....	7	.....	.....	.....	1	2	2	1	1
.70-.75.....	7	.....	.....	.....	1	3	.....	2	1
.65-.70.....	5	.....	.....	.....	.....	1	2	2	.....
.60-.65.....	3	.....	.....	.....	1	1	.....	1	.....
.55-.60.....	3	.....	.....	.....	.....	.....	2	.....	1
.50-.55.....	2	.....	.....	.....	.....	.....	1	.....	1
.45-.50.....	2	.....	.....	.....	.....	.....	.....	1	1
.40-.45.....	3	.....	.....	.....	.....	.....	2	1	.....
.35-.40.....	1	.....	.....	.....	.....	.....	.....	.....	1
.30-.35.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.25-.30.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.20-.25.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.15-.20.....	1	.....	.....	.....	.....	.....	.....	1	.....
Mean.....	.....	1.44	1.18	1.00	.909	.772	.616	.604	.577
Probable error....	.....	±.016	±.009	±.013	±.015	±.009	±.015	±.021	±.015
Standard deviation	.....	.147	.087	.122	.133	.085	.135	.192	.133
Probable error....	.....	±.011	±.006	±.092	±.011	±.006	±.011	±.015	±.011

The inference to be drawn from these facts is that whereas structural elements tend to indicate important differences in difficulty of reading materials throughout the elementary school, some other factors are essential in measuring difficulty at the junior high-school level and presumably beyond. Such an inference does not mean to imply that other factors are of no

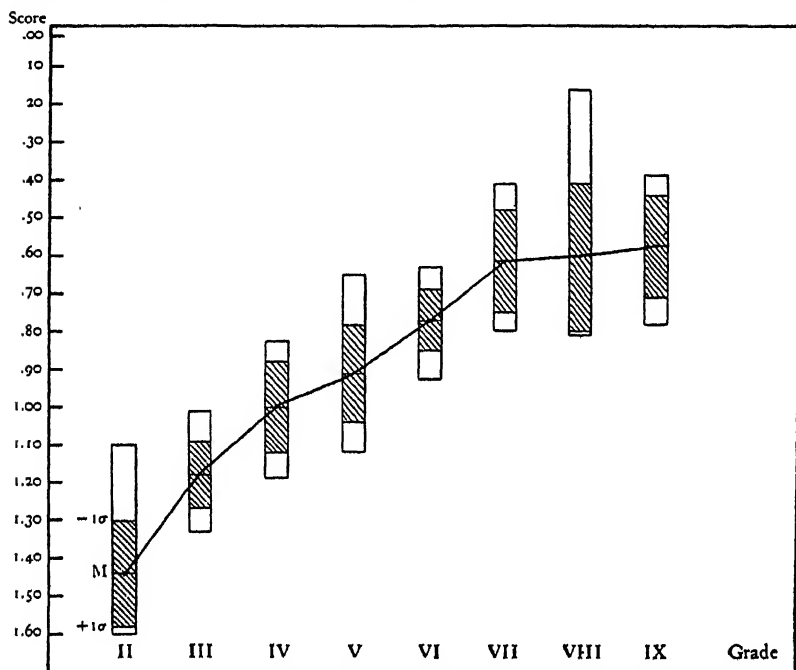


FIG. 25.—Predicted difficulty of reading texts for elementary and junior high schools in terms of range, mean, and standard deviation.

consequence in determining difficulty in the elementary grades, but that sufficient difference exists with respect to the occurrence of structural elements to make their use possible in estimating difficulty. Whether these other factors are related to number and quality of ideas, to the degree of directness by which the ideas are presented or to some other aspect of style, or whether they are related to the breadth and depth of the reader's experiences are questions which require further study.

How can the facts presented in Table LVII and Figure 25 be used in interpreting the difficulty of adult reading materials characterizing Areas A, B, C, D, and E? Figure 26 suggests the answer to this question. In the diagram is shown the distribution of scores of adult books as in Figure 23. Areas of difficulty are indicated along the base-line by the sigma values defining each. Superimposed on the distribution are rectangular blocks

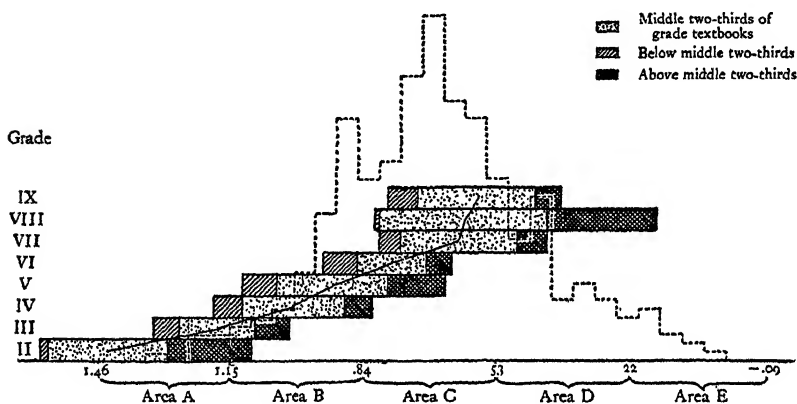


FIG. 26.—Interpretation of areas of difficulty in terms of difficulty represented by textbooks for grades II to IX.

illustrating the same facts that appear in Figure 25. The length of each block represents the range of scores predicted for all books for a given grade. The shaded portion indicates the range of difficulty of the middle two-thirds of the books studied. The curve through the blocks shows the trend of average difficulty of books for grades 2 to 9, inclusive.

When areas representing the difficulty of adult books are compared with areas of difficulty for children's textbooks in reading, the following conclusions seem warranted:

1. Least difficult adult books, that is, "very easy" books in Area A, are about as difficult from the point of view of structural elements as reading textbooks for second grade and most reading textbooks for third grade. If the 350 books studied may be taken as representative of adult books in general, it is evident

that relatively few fall at this level. These few are simplifications of standard novels and other purposeful attempts to express adult subject matter in very simple language.

2. The difficulty of "easy" adult books in Area B is best described in terms of reading textbooks for fourth grade. Approximately all the texts for this grade have indexes of difficulty between .84 and 1.15. A large number of texts for fifth grade and a considerably smaller number of third-grade texts also rank in Area B.

3. Area C, containing "average" adult books, represents a degree of difficulty equivalent to that of most reading texts for sixth grade and of many readers and literary texts for junior high school. Although the mean difficulty of books for eighth and ninth grades falls within this area, a considerable portion of the total range of difficulty represented by these books falls beyond Area C into Area D. Inasmuch as a large number of books on a variety of subjects may be characterized "average," it is evident that much adult reading material is no more difficult, structurally, than the average reading text for sixth grade and junior high school.

4. "Difficult" books in Area D are less easily described in terms of grade levels. If we say that they are equivalent, from the point of view of structural difficulty, to many reading texts for junior high school, we fail to tell the whole story. They are that—and more. If we assume that they are equivalent in difficulty to texts for senior high school, we shall find that evidence in support of the assumption is not easily obtained. Textbooks in reading are not usually provided for this level, and other books tend to deviate from the general into some specialized field. Were such facts obtainable, we should still be forced to question whether they present a true picture of difficulty at this level, where structural elements are of less significance.

5. The meaning of "very difficult" books cannot be interpreted with precision from data in Figure 26. That Area E is outside the range of difficulty represented by the textbooks studied is obvious. Structurally, then, it represents a degree of difficulty

beyond that of reading texts for elementary and junior high schools. Perhaps, however, at this area, structural difficulty is relatively less important than other qualities in determining whether a reader who is able to read a book classified in Area D will meet any more serious difficulty in Area E. It seems altogether probable that the structural obstacles in one will be no more significant than in the other, inasmuch as data already presented show that structural elements are less closely related to difficulty for "good" readers than for "poor" readers. On the other hand, at this area, as elsewhere, structural elements are of considerable significance for readers of limited ability, although vital interest in the content of a very difficult book and a genuine motive for reading may reduce its difficulty as defined by structural elements alone.

WHAT PERCENTAGE OF ADULT READERS CAN READ BOOKS  
AT AREA A, B, C, D, OR E?

Since the general notion of differences in difficulty of reading materials implies differences in reading ability, it appears that the findings of the present chapter may gain in meaning if viewed in the light of the findings of chapter iii. It will be recalled that about one-sixth of the adults tested were found to read with a proficiency normally attained by high-school graduates. These are the readers, then, who can presumably read any general book with an index of difficulty falling at any point along the scale from Area A to Area E. This need not imply that such readers have acquired mature and unmodifiable reading habits nor that their difficulty in reading is unrelated to structural elements. On the contrary, investigators have recently found gains in various aspects of reading ability attributable to training even at the college level. Furthermore, data in chapter iv give proof that structural elements may influence difficulty in some degree for the best readers. What seems tenable to conclude, therefore, is that although one-sixth of the population studied is presumably able to read general material even of a very difficult sort, they may find technical material, especially in an unfamiliar field, difficult to comprehend.

Evidence presented in chapter iii shows further that approximately half the adults tested made a reading score equivalent to grade 7.0 or above. If the group tested may be taken as a fairly representative sample of the total population, then we may conclude that about half are able to read understandingly most of the material in Area C. And they have a vast amount of interesting material to read. It includes a variety of good stories and informational books on travel, biography, sports, and so on, the difficulty of which falls well within Area C, the realm of "average" books.

In view of the fact that about one-third of the adults co-operating in the study have a reading achievement at fifth grade or below, a large number of readers cannot be expected to read understandingly materials of greater difficulty than those in Area B. This conclusion should probably be qualified somewhat, for the reason that readers of lesser ability may read a novel or biography from Area C with emotional satisfaction, if not with complete comprehension. In such case, we may question whether he will read books below this area with the same degree of pleasure. In the present study we have made no attempt to measure emotional outcomes of reading, save as they be measured indirectly with comprehension.

The findings of chapter iii indicate that about one-sixth of the adults tested have a reading ability equivalent to the norm for fourth grade or below. For them, materials in Area A and Area B seem appropriate. But such materials are relatively few in number. Accordingly, a large percentage of adults whose educational progress depends on extensive reading of simple, easy material must at present gather their reading experiences largely from children's books.

What we have just attempted to show is that large differences in the difficulty of adult books are paralleled in a degree by differences in adult reading ability. For every general reader, then, there is some reading material now available which he can read, provided that we can get book and reader together. How this objective may be accomplished by a knowledge of the difficulty of a particular book is what we propose to show in the chapter



which follows. The amount of reading material of appropriate difficulty is not equal for various levels of ability. For one class of readers there is an abundance of suitable material; whereas for another class simple, easy materials are meager in quantity. To provide adult books simple enough to fit readers of low ability is a problem for the writer and the publisher. This problem we shall consider in a later chapter.

#### CONCLUDING STATEMENT

The facts presented in this chapter indicate that differences in the occurrence of significant structural elements may be utilized in comparing the difficulty of adult reading materials. The use of these elements in obtaining an index of difficulty for specific books has been illustrated to the point of showing, first, that the structural difficulty of adult books in general covers a wide range; and, second, that significantly different areas of difficulty may be defined between the most difficult and the least difficult book in the total range.

By a definition of these areas, it becomes possible to speak relatively yet precisely concerning the difficulty of a given book—relatively, because an “easy” book is easy in relation to other books; and precisely, because the relative designation “easy” is merely a descriptive interpretation of an accurate, numerical index. By interpreting each area concretely, we are able further to describe a given book as one that is about as difficult structurally as textbooks in reading for a particular school grade.

Although we have classified books along a scale of difficulty from “very easy” to “very difficult,” it must be remembered that this classification is intended only for readers of limited ability, that is, for persons who, like our “poorest” readers, find in general materials structural obstacles to understanding. The classification would be quite different were it made applicable to adults whose reading ability equals or exceeds our “best” readers. For such individuals, *The Epic of America*, *Only Yesterday*, *The Tragic Era*, and other of the “very difficult” books for limited readers would probably be classified “easy,” if not

“very easy.” At higher areas would be ranked another sort of “difficult” book, such as Eddington, *Nature of the Physical World*; Haldane, *Daedalus*, or *Science and the Future*; Newman, *Nature of the World and Man*; and Spengler, *Decline of the West*—books in which difficulty is influenced more by the quality of the concepts presented than by inherent elements of expression.

In order to classify books for the highly skilled, independent reader, we need a new instrument of prediction based upon new criteria of difficulty and upon inherent elements other than those of structure. Whether a classification of books for these independent readers is practicable or necessary is a problem that merits investigation. For all classes of readers we need ultimately a more refined instrument of prediction, one that will recognize the interrelation of all factors of the reading situation. And this interrelationship can be determined only by extended study of the kind mentioned throughout this report.

## CHAPTER VII

### HOW TO SELECT READING MATERIALS FOR ADULTS

HOW to select readable materials for adults is the practical consideration of this chapter. We have approached the problem in the light of the following questions: What is its importance for advisers and teachers of adults? What are the issues which must be considered in selecting readable books? What is the value of information concerning elements of difficulty in selecting reading materials? How can such information be put to practical use by librarians, readers' advisers, and teachers of adults?

Although we have attempted to discuss these questions in considerable detail, we have not attempted to answer them. That is more than the scope and accuracy of the present study will warrant. In succeeding sections of this chapter discussion of the foregoing questions aims to do two things: first, to stimulate thoughtful consideration of the important problem of selecting reading materials for other persons to read; and, second, to illustrate how the findings of objective studies may be applied in practical situations. What we propose in the latter connection is not an entirely new method as a substitute for current practice but, rather, a means of unifying, objectifying, and supplementing methods now in use through an application of the findings presented in the preceding chapters.

#### IMPORTANCE OF THE PROBLEM

Guiding adult readers in a more effective use of printed materials is no new responsibility for the librarian. It is, however, a greater responsibility than it was when the amount of library reading was notably less than at the present time. Reports from sample libraries in thirty-three cities show that the amount of

reading since 1929, as measured by the number of volumes borrowed for home reading, has increased more than 50 per cent for seven cities reporting.<sup>1</sup> For Hammond, the increase is 173 per cent; for Akron and Dallas, 116 per cent each; for Dayton, 67 per cent; for Washington, D.C., 64 per cent; for Memphis, 59 per cent; and for Houston, 58 per cent.

An examination of library records for other cities not included in the general survey reveals the same phenomenal growth during the period of the depression. Circulation figures at the Evanston Public Library, for example, have increased 67.44 per cent since 1928.<sup>2</sup> More than 50 per cent of the residents of Evanston were accredited borrowers at the close of 1933, representing an increase in number of patrons amounting to 21.6 per cent since 1929. Remarkable as these figures are, they fail to give a true picture of the growth in library patronage during the five-year period, for the reason that only the reading of accredited borrowers is recorded. There still remain to be considered scores of persons everywhere who come to the public library to read newspapers, periodicals, and books of reference, but who have no cards and who never make withdrawals.

Increased library patronage finds ready explanation in the present economic situation. Persons who normally spend their leisure in other forms of recreation are now turning to the library in steadily increasing numbers. Some come to "browse," because there is nothing else for them to do. Others come with the purposeful intent of seeking security, comfort, and happiness in self-improvement. These last are the readers "with a purpose" who find in reading a new avocation; or who aim to gain new knowledge about trades and professions of which they are relatively uninformed; or who hope to find some explanation for current social and economic changes. They are the readers of non-fiction—the serious readers who are pursuing definite courses of reading on general or specialized subjects.

<sup>1</sup> "Increase in Reading since 1929, Shown in Reports from Sample Libraries in 33 Cities," *Library Journal*, LVIII (January 15, 1933), 77.

<sup>2</sup> "Public Keeps Pace with New Conditions," *Evanston Review*, IX (February 22, 1934).

Despite the fact that many persons come to the library daily without seeking guidance from the library staff, others are regularly requesting such service. They represent an interesting variety of readers: the white-collar class—students, business men and women, and professional people—the laboring group, and the endless army of the unemployed. Probably the library itself has encouraged requests for advisory service by its growing tendency to provide it. Whether the one is the cause and the other the effect, or vice versa, is relatively unimportant. The significant fact is that adults are increasingly seeking guidance in their reading and that libraries are increasingly providing it. In the larger libraries where the need for guidance is particularly acute, skilled advisers and consultants have been added to the staff to promote more intimate contact between library and reader, to diagnose the readers' needs, and to furnish reading courses to fit these needs. In 1929, some twenty-five libraries had one or more specialists to direct adult reading. This number since has increased to forty-four. Other libraries, the number of which cannot be estimated, are instituting "made-work" programs and CWA projects designed to effect such changes in the routine work as will enable regular librarians to devote more time to advising adult patrons.

Advisory activities themselves are undergoing significant changes. Generalized forms of guidance are giving place to more particularized attempts to fit reading materials to individual needs and capacities. Lists of books on various subjects, pamphlets and bulletins orienting a given field, and similar guides for the general reader are being increasingly supplemented by a more personal kind of assistance. It is personal because it is based upon reliable information concerning a reader's particular interests, his educational background, and his social and economic status. Every effort is directed toward fitting each individual's reading to his interests and abilities so effectively that it will yield him the greatest possible good.

The problem of selecting appropriate reading materials for adult readers is not confined alone to voluntary reading of the

"out-of-school" sort. It seems equally acute in connection with the more formalized type of reading provided for instructional use in school. Unfortunately, many adults cannot pursue self-education unaided. Among them are foreigners, illiterates, and others who for one reason or another missed early educational opportunities or who are being forced to make an immediate adjustment to vocational demands.

In addition to these adults, "there are always to be found almost numberless persons in whom valuations, ideals, and trained powers of self-education are needlessly low, due perhaps in part to failures of previous school educators—and perhaps those of other agencies—to hold the important goals of self-education in view as among desirable objectives."<sup>3</sup> They meet in evening schools, community centers, church schools, classes for the unemployed, or in other of the numerous agencies applying the traditional instructional technique for promoting educational progress. Others are to be found in prison schools and in classes in county jails, where the work of education and correction go hand in hand.

An analysis of activities engaged in by adult-education agencies indicates that those of a cultural nature are now exceeding all others. Relatively few students are in school to satisfy a casual interest. Many are demanding a continuation of general education and are manifesting a vital interest in intellectual advancement. Some reading materials must therefore be provided. More must be recommended. Their selection must aim to fit the needs and abilities of students at various stages of progress. The obligation placed upon teachers and directors is a serious one. It is serious, first, because the evidence seems conclusive that there is a dearth of good readable material for adults of limited ability; and, second, because an objective technique has not been developed for determining with accuracy what material is readable for what persons.

Selecting appropriate reading matter for adults is a problem

<sup>3</sup> David Snedden, "Self-Education: A Needed Emphasis on Current Proposals for Adult Education," *Journal of Adult Education*, II (January, 1930), 32-37.

that extends to such educational agencies as forum, radio, and others which enable people to keep on learning while being entertained. Inasmuch as the forum aims to promote a broad understanding of current problems and a critical attitude toward them, the value of recommended readings is obvious. In some communities, one member of the library staff is in constant contact with the forum meetings. Through co-operation with the forum leaders, this librarian prepares book-lists and bibliographies on numerous subjects. These are discussed and distributed by the leader at the evening meeting.<sup>4</sup> In other communities, the attempt to prepare book-lists fitted to the needs of a heterogeneous audience has come to be recognized as futile. Instead, individual book-lists which aim to fit the reading needs, interests, and abilities of a particular reader are prepared upon request. What technique to employ in order that such information may be secured expeditiously and book selection be made effectively is a problem of no small importance in reading activities related to the forum.

With respect to education on the air, it is evident that no other educational medium can equal the radio in reaching large audiences. Whether the members of these audiences listen and learn or merely listen is a perplexing question. It is believed, however, that the chances of the first alternative being achieved are multiplied by a properly organized follow-up program. To this end, the National Advisory Council on Radio in Education has adopted two methods by which to guide listeners in follow-up activities.<sup>5</sup> The first is to distribute printed material among the radio audience in the form of a "Listener's Manual" or notebook. Each notebook contains a foreword or brief introduction to the field in which a particular series of lectures is delivered. Summaries of the lectures are then presented, followed by questions for group discussion. Finally, there appear lists of sug-

<sup>4</sup> Mildred O. Peterson, "Des Moines Holds Public Forums," *Library Journal*, LVIII (May 15, 1933), 453-54.

<sup>5</sup> Levering Tyson, *Radio and Education*. Proceedings of the Second Annual Assembly of National Advisory Council on Radio in Education. Chicago: University of Chicago Press, 1932. Pp. 306.

gested readings for beginners and for more advanced students. The second method in the follow-up program is provided through co-operation with the American Library Association, which arranges to have books on the collateral reading-lists made available in libraries.

An evaluation of these methods shows them to be far less successful in interesting the radio listener to read than is commonly expected. Probably the reading-lists themselves are partly at fault. In reporting to the Advisory Council in this connection, the official radio publishers make the following statement: "Future printed material for listeners should be even more carefully prepared and should go much farther in stimulating independent reading and use of the information received during the broadcast. More attention should be given to the gradation of the material in each series, and to tests and other checks to record the listener's progress and to stimulate him through the thrill which comes from knowledge of such achievement."<sup>6</sup>

Obviously, there is no typical radio listener, any more than there is a typical reader. If listeners are also to be readers of the subject in which they are interested, recommended readings must be appropriately graded—from easy, short, general presentations of the subject (if there are such) for the least competent reader to detailed, technical treatments for the scientific reader.

The problem of selecting readable books is relatively less important when viewed in its relation to the home consumer—the reader who is also the buyer of the books he wants to read. For the purchasing of books does not loom high in the expenditures of American families. According to figures for commodity sales presented by the Census of Distribution, "the proportion of America's dollar going to the bookstore is about one-fifth of a cent, as compared with 19 cents to the automobile industry, 1.4 cents to the candy store, one-third of a cent to the florists, and 1.1 cents each to jewelry stores and radio and music shops."<sup>7</sup> A

<sup>6</sup> *Ibid.*, p. 78.

<sup>7</sup> O. H. Cheney, *Economic Survey of the Book Industry, 1930-1931* (New York: National Association of Book Publishers, 1931), p. 56.



detailed investigation of the living standards and expenditures of one hundred families of employees of the Ford Motor Company in Detroit shows that of the total budget only one-hundredth of one per cent was spent on books.<sup>8</sup> Increased income means little difference in the buying of books. Bigger shares of larger incomes go to automobiles, movies, travel, vacation—but not to books.

How many book-buyers know exactly what book they want to purchase when they enter a bookshop is not known. That many examine a book critically before purchasing in order to see how nearly it suits their individual needs and interests is a fact to which most of us bear witness. Such persons can make their own selection if the right book is available. Others are more dependent upon salesmen whose information about books and readers is their best means of bringing book and buyer together. Any improvement in methods of obtaining either type of information presumably will tend to increase book sales and subsequent book-reading.

The selection of the right material for the right reader, then, is a problem of no small consequence. Recreation for leisure hours, intellectual progress, even literacy itself, depends in a large measure on how well the problem is solved by the reader himself or by someone from whom he seeks advice and counsel.

#### WHAT ASPECTS ARE TO BE CONSIDERED IN SELECTING READABLE MATERIAL?

Selecting a readable book, like defining a readable book, is a highly individual problem. It depends, first, upon the reader's interests, needs, and abilities; and, second, upon the qualities of a book that make it readable for him. Information of both sorts must be obtained by the person who would guide a reader most wisely. Studies of advisory practices in libraries indicate that many different kinds of information are obtained by advisers as a group. Some advisers maintain a traditional conservatism toward inquiring into the "ins and outs" of a person's history.

<sup>8</sup> *Ibid.*, p. 58.

Others proceed frankly and directly to enlist a patron's co-operation in determining all factors that may influence his reading needs.

Winslow has discovered, from replies of eighteen readers' advisers to a questionnaire, that information on seventy-two items is being secured more or less frequently by at least one adviser.<sup>9</sup> The purpose of this information is indicated by the following statements: to determine specific interests and problems, to evaluate a patron's judgment and tastes, to determine the intensity of his reading interests, to determine his ability and disability, to determine external obstacles to reading, to evaluate books and reading courses for a patron, and to determine a form of study best suited to his needs. The composite list of items gathered by Winslow include: age, sex, place of residence, nationality, length of residence in the United States, amount and nature of previous schooling, formal classes now being attended, personal traits aiding or handicapping the student, occupation, vocational ambitions, recreations and hobbies, books read in the past year, most interesting book ever read, subject of reading courses requested by the patron, reasons for electing the specific course, and so on, to a total of seventy-two.

Not all librarians record the information obtained from their patrons. "To some librarians," Mason observes, in commenting on library practices, "records are vital; to others, they are negligible. Some seem to consider the records ahead of the reader and his needs. Others fear that the mechanics will overshadow the personal equation and they neglect the great possibilities of service that records might render."<sup>10</sup> If information about a reader has no value beyond the immediate "sizing-up" of his reading needs and interests, then recording that information is unquestionably a needless expenditure of time and energy. If, on the other hand, it is to become a permanent tool which en-

<sup>9</sup> Amy Winslow, "A Study of Data Pertinent to the Advising of Adult Readers." Unpublished Master's thesis, Graduate Library School, University of Chicago, 1929. Pp. 200.

<sup>10</sup> Charles W. Mason, "Adult Education and the Public Library," *Library Journal*, Vol. LVIII, No. 18 (October 15, 1933), pp. 830-32.

ables an adviser to serve a patron increasingly better, then in, the long run, records seem both economical and practical.

In adult classes considerable information is usually obtained from the student on his application for enrolment, but this is probably used for administrative purposes more often than for improvement of instructional techniques. The formalized character of the classroom tends to encourage the assignment of reading to groups rather than to individuals. Hence, in classes organized on the basis of ability, students may be given reading that is fitted to their abilities rather than to their individual interests and needs. Some investigation is necessary in adult schools to determine what methods are being used in selecting reading material, how satisfactory these methods are, and what methods are most effective with different types of readers.

Turning from the reader to the book, we may ask, What qualities about a book shall be considered in selecting one that will be readable for a particular group of readers? This question leads back to chapter ii, which gives a summary of opinion of librarians, publishers, and others interested in adult education with respect to what makes a book readable. The chapter also indicates the nature of the problems that arise in defining a book as readable or non-readable. They are the problems involved also in selecting a readable book. For one cannot define a book as readable save in terms of a particular group of readers. And once it is defined in such terms, selection is relatively simple.

We need to know, therefore, the factors of content, style, organization, and format which influence the readability of a book for different readers who are identified with a particular class with respect to interests, education, and social and economic status. Other investigators are endeavoring to discover what people want to read about. From their findings, questions concerning interesting content are being answered. But we do not know what methods of presentation, what stylistic devices, what physical aspects of a book, or what forms of organization appeal to different sorts of readers. Each of these and many other aspects must be defined for many classes of

readers before the selection of a readable book can be reduced to a precise technique.

#### THE PRESENT APPROACH

In this chapter we have approached the problem of selecting readable books from the point of view of inherent ease or difficulty of content. We have taken the position that it is important, among other things, that the book should be easy enough to be readable. Not because ease is of necessity the primary consideration in selecting a readable book—that remains to be discovered—but because ease or difficulty is the aspect of readability with which this study is chiefly concerned. And it is the only aspect about which we have obtained objective information. Again we repeat, by concentrating on difficulty we in no way deny the importance of other factors in the total situation. Unquestionably the reader's interest and zeal may tend to compensate for inadequacies in reading ability and thereby alleviate a part of the difficulty inherent in the material. These elements, too, must be isolated for study. Ultimately all of them must be considered in conjunction with ease or difficulty as determined by structural elements in selecting a readable book for a particular reader.

Most persons who are engaged in guiding adult reading probably agree with Chancellor that

... difficulty of text becomes a much less vital factor if the teacher or librarian is able to tap a reader's keen desire to learn something about some particular subject; that given this strong desire to get some facts and information on his pet interest he will master unusual difficulties of vocabulary and sentence structure in order to get the desired information, and that he will learn to read incidentally.<sup>11</sup>

This point of view, however, cannot wholly disregard difficulty of material, if we are to accept scientific evidence concerning the relationship between difficulty and enjoyment in reading. For example, Burch reports that 80 per cent of the voluntary

<sup>11</sup> John Chancellor, "Available Reading Material for Native-Born Adult Illiterates and Near-Illiterates." Mimeographed. Washington, D.C., Bureau of Prisons, Department of Justice. 1933.

reading among junior and senior high-school pupils is chosen from books which they read with an accuracy ranging from 60 to 90 per cent, with a median of 75 per cent.<sup>12</sup> One may infer that material harder than this fails to produce in high-school pupils the satisfaction and pleasure that are effected by an easy book.

McAdams has compared the effect of permitting high-school students to read only those books which they could comprehend against the effect of allowing them to read any book.<sup>13</sup> Her findings point to a marked relationship between enjoyment and comprehension and between lack of enjoyment and difficulty. She concludes that if high-school advisers will ascertain the level of comprehension attainable by each student and then suggest books of an appropriate degree of difficulty, they may be able to keep the student's reading interests alive and active.

#### A TYPICAL SITUATION

For the purpose of illustrating how the right book from the point of view of structural difficulty may be selected for the right person, let us assume a typical situation. An adult reader comes to an adviser in library or classroom and requests a book on adventure, a reading-list in economics, or, perhaps, some other reading help. What the reader wants to read about is therefore defined at the outset. His motive for reading is implied in his request. Two other types of information are important. The first answers the question: How well can the reader read? The second is concerned with the query: What material bearing on the desired subject is appropriate in difficulty to the reader's level of reading ability? Expressing the answer to both questions in common terms gives a simple basis for selecting books of appropriate difficulty.

<sup>12</sup> Mary Crowell Burch, "Determination of a Content of the Course in Literature of a Suitable Difficulty for Junior and Senior High School Students," *Genetic Psychology Monographs*, Vol. IV, Nos. 2 and 3 (August-September, 1928), p. 265.

<sup>13</sup> Mary Ann McAdams, "The Effect of Guidance on the Reading Interests of Tenth Grade Pupils." Unpublished Master's thesis, Department of Education, University of Chicago, 1933. Pp. 110.

The practicability and effectiveness of such a procedure for students in high school has been demonstrated by McAdams in her experimental study. As a first step in controlling pupil's reading, she assigned to each student in two experimental groups what she called an "enjoyment-score" in reading. This score was based on comprehension as measured by three reading tests, and was considered representative of the level of difficulty at which a pupil may read with ease and pleasure. Three judges then assigned to each of 230 books a "difficulty-score" obtained by scaling the material through the use of Standardized Oral Reading Paragraphs. The validity of this procedure had been determined earlier by experimentation.<sup>14</sup> Pupils in the experimental groups were requested to read only those books having a difficulty-score equivalent to their enjoyment-score. Pupils in the control groups were not assigned an enjoyment-score nor were they restricted in their reading.

The findings of the study with respect to enjoyment and difficulty have been given on page 234. They support the proposal that reader scores representing ability and book scores representing difficulty can be expressed in common terms, and hence can be used effectively in guiding book selection. Only 9.9 per cent of one experimental group, and 26.3 per cent of the other, rejected books on the ground of their being "too hard," whereas 70.5 per cent of the unguided group found books which they attempted to read too hard. The results obtained by McAdams show that although her technique does not entirely eliminate unsatisfactory choices, it greatly reduces the chance of a pupil's attempting to read a book which is too difficult to be readable.

Since the primary purpose of this chapter is to present possible plans whereby reading ability and reading difficulty may be co-ordinated, it seems important to describe and to evaluate certain procedures which are used or which may be used to that end. This is done in succeeding sections.

<sup>14</sup> Laura M. Larsen, "An Objective Method of Selecting Appropriate Geographical Reading for Fourth-Grade Pupils." Unpublished Master's thesis, Department of Education, University of Chicago, 1925. Pp. 73.

USE OF OBJECTIVE TESTS IN DETERMINING  
HOW WELL ADULTS READ

The most scientific method of determining how well a person reads is to measure his achievement by means of objective tests which define ability in terms of standards usually expressed as "grade norms." In their study of children's reading, for example, Vogel and Washburne used the Stanford Achievement Test to determine reading scores and to establish the difficulty of reading materials.<sup>15</sup> Dale and Tyler used the Monroe Standardized Silent Reading Test in determining achievement of adults of limited ability.<sup>16</sup> They then predicted the difficulty of technical material in terms of these scores. In the present study, relative ranks on the Adult Reading Test have been used to identify "best" and "poorest" readers. Difficulty of general reading material is estimated in chapter vi in terms of the average reading score of "poorest" readers on this test.

Several advantages may be claimed for using reading tests. In the first place, tests give a reliable index of reading ability in terms of comparable scores based on actual performance. For children, these numerical scores can readily be translated into the grades to which they correspond. If a pupil makes a test score equivalent to grade score 5.2, we know that he reads with a degree of ability normally attained in the second month of fifth grade. He may be expected, therefore, to read and comprehend most of the material written for fourth grade and the easiest material for fifth grade. A second advantage in measuring reading ability by reading tests lies in the fact that test scores may serve as a basis for grading books for difficulty. For example, the formula devised by Vogel and Washburne for determining difficulty of children's books gives the reading score on the paragraph-meaning section of the Stanford Achievement Test necessary for reading the book measured. This score may be

<sup>15</sup> Carleton Washburne, *The Right Book for the Right Child*. New York: John Day Co., 1933. Pp. 358.

<sup>16</sup> Edgar Dale and Ralph W. Tyler, "A Study of the Factors Influencing the Difficulty of Reading Materials for Adults of Limited Reading Ability," *Library Quarterly*, Vol. IV, No. 3 (July, 1934), pp. 384-412.

translated into a reading grade which shows the correct grade-placement for a particular book.

On the adult level the use of tests for measuring the ability of the reader and for interpreting the difficulty of the material is more restricted. The obstacles to be met in testing adults are many and varied. Some are born of the testing idea itself, as shown in chapter iii. Others are inherent in the adult reading situation, which in general is not readily adaptable to a testing program.

Adult reading is usually an individual, voluntary activity. A person reads what he wants to read, provided that it is accessible and readable. Furthermore, he reads when and where it pleases him to read. Only in organized classes is he one of a group of readers whose reading is prescribed. Here the use of tests as a part of the routine of instruction is both feasible and desirable. Adult members of such classes co-operate willingly, if they believe that the testing is related in any way to their educational advancement. For such readers there is need for reading tests constructed from adult materials and accompanied by norms for measuring successive stages of progress. Tests of this sort are now under construction. It is hoped that by their use one can obtain a measure of a reader's ability, which also will be an index of the difficulty of materials that he can read understandingly.

Whether the use of tests for measuring reading ability is practicable in the library is another matter. Here adult-education service is being organized systematically but less formally than in the classroom. The librarian's advice or assistance is aimed to guide those who are seeking self-instruction. "It must be of first-quality, never superficial or haphazard. Neither must there be anything pedagogic or official or superior about it."<sup>17</sup> If advising becomes teaching, then there is danger that rapport between reader and adviser will be disrupted and the seeker of self-education will give up his enterprise offended or disgusted.

<sup>17</sup> Sir Henry A. Miers, "Adult Education in Relation to Libraries," *Library Journal*, Vol. LVIII, No. 8 (April 15, 1933), p. 339.



How far the librarian can go in measuring reading ability by the use of tests without introducing a disastrous practice remains to be discovered. Furthermore, from the standpoint of time required to give and score tests, their use seems uneconomical and impracticable in everyday library practice. Important as it is that the librarian or readers' adviser should know the reading ability of library patrons in order to give systematic, sustained guidance, it seems probable that a less direct method than testing should be followed at present in obtaining this information.

#### JUDGMENT OF READING ABILITY BASED ON KNOWLEDGE OF MATERIALS PREVIOUSLY READ

Indirect evidence as to how well a person can read may be obtained by the simpler and presumably more tactful method of measuring reading ability, not in terms of his performance on a test but in terms of the kind of material which he has read previously. This method is now widely used. As an adviser becomes acquainted with a patron, she learns to know the type of material he usually reads. If he asks for a book in a new field of interest, she may be able to approximate the book he will find readable in that field by recalling or finding out the magazines or books he has read.

This method has the advantage of being readily applied. But it possesses serious limitations. In the first place one must recognize the fact that subjective estimates of human abilities implied by human actions may or may not be reliable. The degree of reliability depends on the validity of the action as an index of the ability, on circumstances accompanying the action, and on the discrimination of the person judging the ability. Although these limitations are general, they have specific application for the adviser who judges reading ability of a patron by his previous reading. Furthermore, the opinion of the adviser cannot be translated into objective terms for another to use in selecting reading material for the same patron.

As a result of the present investigation, it is possible to supplement this general technique by using a classified list of ma-

terials representative of five areas of difficulty which imply a similar number of levels of reading ability. The beginning of such a list is to be found in chapter vi and in Appendix F. The study of reading difficulty reported in that chapter needs to be extended to include all books which appear best suited to readers of average or below-average ability. With such a list, a librarian should be able to define the difficulty of a book reported read in terms which will indicate in a general way the area of difficulty best suited to the reader's ability.

Obviously, the greater the amount of evidence obtained relative to previous reading, the greater the degree of accuracy with which reading ability may be inferred. For example, if a person reports having read and enjoyed Carroll, *As the Earth Turns*, score .86; Colum, *Cross-Roads in Ireland*, score .94; and Overstreet, *About Ourselves*, score .91, it is fairly certain that he can read understandingly books which we have ranked "easy." This is not to say that he may not be able to read books ranked "average" or "difficult." If, however, he reports that he cannot understand Hemon, *Maria Chapdelaine*, score .31; Mason, *The Spell of Southern Shores*, score .47; or Dimnet, *The Art of Thinking*, score .51—books whose respective themes are similar to those of books read and enjoyed—then the inference seems warranted that these so-called "difficult" books are outside his range of comprehension. Although we are assuming in this connection that the rejection of a book as too difficult is the result of structural handicaps, it is altogether probable that the difficulty lies in part in other aspects of style or content. The librarian who suspects such is the case may discover the source of difficulty by questioning the reader or examining the particular book rejected. A more accurate estimate of the reader's ability will thus be obtained.

#### AN ESTIMATE OF READING ABILITY BASED ON INFORMATION CONCERNING LAST YEAR IN SCHOOL

A third means by which some advisers estimate a patron's reading ability, and hence the difficulty of materials which he can read, is information concerning the amount of schooling he

has had or the last school grade attended. This type of information has at least one advantage. It can be obtained easily. Two distinct limitations attend the use of this information. In the first place, the last year in school is not always a reliable index of reading ability. Data reported in chapter iii indicate that students at the secondary-school and college level have been found to manifest a marked immaturity in their ability to read. Some evidence has been reported which shows that the disparity between educational progress and reading ability is considerably less among new literates and adults whose formal schooling terminated early.

In a study carried on in the opportunity schools of South Carolina, comparisons were drawn between reports of the last grade attended in school and reading achievement as measured by the Monroe Standardized Silent Reading Test.<sup>18</sup> Significant correspondence was noted. For 226 adult students in four groups, the average grade, according to statements made upon registration, and the achievement grade on tests were respectively: 2.3 and 2.2, 2.6 and 2.4, 5.3 and 4.9, and 6.4 and 6.9. When individual records, rather than average records, were compared, it was found that in only forty-nine cases was the discrepancy between years in school and ability on the test greater than one grade. For those who claimed one or two years of schooling, the score exceeded the claim by less than a year. The higher the grade, the less the agreement between claim of previous schooling and reading-score, as shown in Table LVIII.

A close correspondence was found by Ojemann between reading ability as measured by comprehension of parent-education materials and number of years in school.<sup>19</sup> The subjects used were 209 parents (mainly mothers) who were attending study groups in a city in Iowa, the population of which approximates 30,000. Subjects having a partial or complete elementary-school

<sup>18</sup> William S. Gray, Wil Lou Gray, and J. Warren Tilton, *The Opportunity Schools of South Carolina* (New York: American Association for Adult Education, 1932), pp. 40-45.

<sup>19</sup> R. H. Ojemann, *op. cit.*, p. 32.

education made an average score on the Ojemann test of 18.98; those having a partial or complete high-school education, 29.25; and those having more than a high-school education, 34.97. A perfect score on the test is 45. Other things being equal, the greater reading ability can be ascribed to longer educational training.

Although we may assume that the agreement between years of schooling and reading ability will be true generally, it appears that for adults of little education more may be implied about

TABLE LVIII

AVERAGE GRADE ACHIEVEMENT IN READING BY GROUPS  
CLASSIFIED ACCORDING TO THE GRADE  
REACHED IN PUBLIC SCHOOL

Number Cases	Grade Reached	Reading Achievement
17.....	1	1.7
12.....	2	2.0
12.....	3	3.0
25.....	4	4.8
31.....	5	5.6
56.....	6	7.5
36.....	7	8.3

reading ability than for those of broader educational background. In the present study, last grade in school, as reported by 756 adults, was correlated with reading ability as measured by the two forms of the Adult Reading Test. Correlations of .532 and .548 were obtained. While these correlations indicate that some relationship exists between last grade attended in school and reading ability, they show also that in individual cases mere claims of attendance may not be a reliable index of reading ability. Capacities and interests, experiences and opportunities all may determine whether reading ability of an adult equals or exceeds the normal expectancy of the last grade attended in school.

A second limitation to the use of this method for estimating reading ability lies in its interpretation. Let us assume that an adult reader reports that he quit school in sixth grade. Let us assume further that the reader's adviser rightly estimates his reading ability at sixth grade. What does this mean in terms of adult reading materials? Up to the present time there has been no objective technique by means of which a reader's adviser could determine what book is of appropriate difficulty for a reader having a particular educational background and reading ability.

Through the use of a classified list of materials this limitation can be obviated and reading ability, as represented by years of schooling, translated into concrete terms. For example, data presented in the previous chapter lead us to presume that a person whose attendance in school ended in third grade should find "very easy" books simple enough to read with fair understanding. These are the books having predicted scores greater than 1.15. According to the classification which we have adapted, they belong to Area A. Persons reporting school attendance ending at fourth or fifth grade will probably find "easy" books best suited to their ability, provided, of course, that their educational pursuits since that time have not carried their reading ability far above or below the normal expectancy of the lower intermediate grades. "Average" books, especially those ranking at the lower extreme of Area C, may be read with ease and understanding by persons who claim a school attendance through sixth grade. Books at the upper extreme of Area C presumably represent a degree of difficulty that persons of junior high-school training are able to read. Attendance through senior high school or college implies ability to read "difficult" or "very difficult" materials as they are defined in this study. That such an implication may assume a maturity of reading beyond the actual truth must be granted in the light of evidence presented in chapter iii.

Probably the most to be claimed for this method is that information concerning number of years in school furnishes a start-

ing-point for guidance. It locates the area of structural difficulty at which a person presumably can read and the one beyond which he probably cannot read easily. Greater precision in defining a reader's level of ability depends on supplementary information relative to his reading interests and habits, obtained by one or more of the several means suggested in this chapter.

#### ESTIMATING READING ABILITY BY THE EXPRESSED PREFERENCE OF AN ADULT FOR PARTICULAR MATERIALS

A fourth method of determining the reading level of an adult is based on the assumption that the expressed preference of a reader for materials classified according to difficulty is a valid index of materials best suited to his reading ability. According to this method, an adviser should have available a variety of materials representing different areas of difficulty. These materials are given to a new patron who comes for guidance, with the instruction that he examine each and choose the one he prefers to read. If he selects "easy" material in preference to that which is "average" or "difficult," it may be assumed that the former is better suited to his needs and abilities. In making this assumption, however, one needs to take into account a variety of contributing factors inherent in the total situation. For example, a reader may hesitate to choose very simple material, particularly if it resembles children's reading. Hence, he deliberately overestimates his ability even at the expense of being given too-difficult reading. Again, an easy book with attractive format may cause a reader to select it in preference to others of greater difficulty less pleasing in size and general appearance. He accordingly defines his reading ability at a level that is spuriously low.

In order to guard against the influence of format, sample passages from books or magazines of varying degrees of difficulty may be used. Examples of such passages are given here. Selection A, an excerpt from the adapted *Robinson Crusoe*, represents "very easy" reading, while Selection B, from *People's Popular Monthly*, is representative of "easy" reading. Succeed-

ing selections, C and D, represent materials that are "average" and "difficult," respectively.

It may be noted that "very difficult" materials classified at Area E have been omitted. The reason for this lies in the fact that the advisory situation with which we are dealing concerns primarily the reader of limited ability. Presumably, he cannot read materials at Area E. If a reader selects a passage from Area D as the one he prefers to read, and if he is found actually to read and enjoy "difficult" books, then it may be assumed that he can read "very difficult" books at least reasonably well. Should he not be able to read books of the latter sort, it seems likely that other factors than those of structure influence the difficulty of "very difficult" materials.

Despite the fact that the selected passages have been taken from books whose predicted scores rank them in areas of difficulty from A to D, respectively, their own predicted scores are not identical with those for the total book. For example, the predicted score for Selection A is 1.40, whereas the predicted score for the entire book is 2.06. This discrepancy is to be expected, for the reason that the latter score represents the difficulty of a whole series of passages from the same book, of which Selection A is but a single sample. Both the sample and its source, however, belong to the "very easy" area.

#### AREA A

(Scores 1.15-2.06)

##### ROBINSON CRUSOE'S BOAT

I needed a boat. So I cut down a great tree. It was five feet ten inches across at the lower part, and four feet eleven inches at the top before it went out into branches. I was twenty days cutting through it at the bottom, and fourteen more days cutting away the branches. After this, it cost me a month to make it into the shape of a boat outside, and three months more to cut out the inside. Thus I made a very fine boat, big enough to carry me and all my goods. When I had finished this work, I was very delighted with it. There remained nothing but to get it into the water.

Defoe, Daniel, *Robinson Crusoe*. Adapted by Michael West. New York: Longmans, Green & Co., 1931. Pp. 16-17.

Predicted score, 1.40

## AREA B

(Scores .84-1.15)

## FUN IN GARDENING

I like to put a bit of "kick" into my own vegetable gardening by experimenting, for I make my gardening "fun," not work. One year I had a half dozen kinds of tomatoes and about that many varieties of beans. I also like to try new crops. A few years ago I successfully tried out Chinese cabbage, an excellent salad crop, which likes the cool weather of fall or early spring. When I hear of some new vegetable—new to me—or read of it in the many seed catalogs I study each winter, I try to give this new fellow a few feet in my garden, "just for the fun of it."—*People's Popular Monthly*.

Predicted score, 1.02

## AREA C

(Scores .53-.84)

## HOW A GIRL SHOULD PREPARE HERSELF FOR A JOB

According to Harriet Houghton, director of vocational work in the American Woman's Association, the young woman should select her job as carefully as she selects her husband. Unless it suits her it means mostly trouble. "Ten years ago," says Miss Houghton, "the general-utility girl, the capable, all-around, Jack-of-all-trades could make a place for herself; today it's the specialist everyone wants. The girl who would get ahead should decide the thing she likes best to do and how to that straight line. The intelligent way for a girl to find the right thing is to look before she leaps—analyze the job and analyze herself and see how the two match up."—*Collier's*.

Predicted score, .751

## AREA D

(Scores .22-.53)

## THE CONTACT MAN IN WASHINGTON

The most conspicuous product of the bewildering multiplicity of bureaus and overlapping of the so-called governmental functions of Washington today is the neo-lobbyist, or Contact Man. Embodying the capacities of sight-seeing guide, house detective, and automobile salesman, this comparatively recent addition to the Capital's professional directory lives well by his ability to penetrate quickly the maze of red tape and petty bureaucratic formality surrounding every governmental official. He has at his finger tips such priceless, and otherwise unobtainable, information as that the Weather Bureau is a function of the Department of Agriculture, instead of the Department of the Interior. He saves time and money for anyone who has business to transact with the government.—*Atlantic Monthly*.

Predicted score, .347



In these paragraphs length has been held relatively constant, each paragraph containing approximately one hundred words. Whether longer or shorter passages would promote more careful discrimination between different degrees of difficulty can be determined only by experimentation. Presumably, the passages should be brief enough to prevent a needless expenditure of time, yet long enough to insure a fairly reliable choice.

The futility of expecting to obtain a perfectly valid index of a reader's ability by a single series of paragraphs must be admitted at the outset. Inasmuch as the selected illustrations deal with different themes, it is possible that a reader will choose Selection B, let us say, because the content is what he wants to read about rather than because it represents the most favorable degree of difficulty. Hence, he overrates or underrates his usual reading ability. In such circumstances, reading a second series of paragraphs of the same sort may result in the reader's preference for Selection C. Whether Area B or Area C represents the difficulty of reading best suited to his ability is a question that still needs to be answered. Presumably, the reading of several series of paragraphs will finally give a reasonably satisfactory index of the reader's ability. Such a procedure, however, is impracticable in the library where an adviser must determine a reader's probable ability as expeditiously as possible.

Librarians have suggested that if the content of all the paragraphs in a given series were held constant, and several series prepared for use in particular situations, the technique described here should bring effective and reliable information concerning a reader's ability. Since each paragraph in such a series deals with exactly the same topic as any other paragraph, a reader will not be diverted from his purpose by the factor of content-interest. Furthermore, the availability of several series, each dealing with a particular theme, will mean that the patron seeking guidance in reading biography, for example, reads a series of paragraphs on biography and selects the one he enjoys most. The reader of travel books will be asked to read sample passages about travel, and so on.

Illustrations of the sorts of paragraphs which may be prepared for this purpose follow. They deal with the common theme, "The Truth about Africa," yet each is representative of a degree of structural difficulty different from any other in the series. As in the preceding illustration, this series includes but four areas of difficulty, A, B, C, and D. Again, Area E is omitted, for the reason that it represents a degree of difficulty presumably outside the realm of comprehension for limited readers. The better readers who choose Selection D can probably read most materials with a structural difficulty defined at Area E.

#### AREA A

Africa used to be called the dark continent. It was given this name because people knew very little about it. The name does not fit Africa today, but many people do not know it. They still think of Africa as the dark continent of the world. They think that you cannot go into the center of Africa unless you cut your own way through the forests. They think that people who go to Central Africa are explorers. They do not know that people have been in all parts of the continent, making roads and building towns. But that is just what has been done. Now there are roads all over Africa, and business is growing fast. We cannot call Africa a dark continent any longer.

Predicted score, 1.88

#### AREA B

People living in one country frequently have wrong ideas about another country. One of our most popular ideas is that Africa is still a dark continent as it was years ago before white men explored it. Many people believe that the only way to enter the center of Africa is to blaze a trail through the forests. So they look upon travellers from Central Africa as explorers. Ideas like these could be quickly changed by a glance at a collection of modern maps. They show that even the heart of darkest Africa has been fully explored and that everywhere the country is open to transportation. Africa is too well-known and too far developed to be called a dark continent.

Predicted score, .917

#### AREA C

It is not uncommon for certain false ideas to be believed so persistently that they become popular. A case in point is the popular belief that Africa is still a dark continent with large areas quite unknown to white men. People who cherish this idea believe that it is difficult to penetrate far into the interior of the country, that one still blazes trails and visits places and people never known before. They hail returning travelers from Central Africa as explorers.

Such ideas need not persist. One glance at a collection of modern colonial maps would quickly establish their falsity. These maps show the heart of darkest Africa as it is today—fully explored, perfectly well-known, occupied, and everywhere open to transportation.

Predicted score, .645

#### AREA D

Among the many popular delusions that are always with us there is none more persistent than the current misapprehension about Africa. It still seems to be believed that considerable areas of the once dark continent remain practically unknown to whites, that it is difficult to “penetrate” the remote interior, that one still blazes trails and visits places and peoples hitherto unknown. Returning travelers from Central Africa are hailed as explorers! Yet this is a delusion which could easily be dispelled. One glance at a collection of modern colonial maps would show the heart of darkest Africa as it is today—a rapidly developing commercial frontier perfectly well known, thoroughly explored, occupied and everywhere open to transportation.—*Review of Reviews*

Predicted score, .393

The selection representing Area D is an original passage taken from an article in *Review of Reviews*, a magazine ranked in the “difficult” class by the method described in chapter v. The predicted index of difficulty for the passage is .39. By rewriting the content of the passage, with attention directed upon significant elements, after the manner to be presented in the next chapter, we obtained selections designated A, B, and C. Their indexes of difficulty are respectively 1.88, .92, and .65.

In using series of paragraphs to discover reading ability, the following procedure is suggested:

1. Find out the general field of interest of the reader, or the specific topic in which he needs guidance.
2. Having discovered his field of interest, show him a series of paragraphs dealing with that field. Ask him to read the various selections and to indicate the paragraph he prefers to read.
3. If time permits, or if a reader is uncertain about a preference, secure a second or a third choice by the use of other series of selections on the same general topic.
4. Record the reading ability of the reader on his identification card, in terms of Areas A, B, C, or D. This information be-

comes a permanent guide for later use in advising him about his reading until such time as he requests harder materials.

The use of this method of determining the reading level of an adult promises to have several advantages. From the point of view of the reader there seems reason to believe that he will be saved embarrassment or wounded pride if the adviser obtains his preference in a perfectly frank but informal way. It seems probable, too, that he will be better served by choosing the kind of reading he finds most pleasant to read. From the point of view of the library, it appears that an economy in time may be effected by obtaining a measure of reading ability which simultaneously identifies the appropriate difficulty of reading materials for the patron in question.

The reader who chooses a very easy paragraph defines his reading ability in terms of materials at Area A, any of which should be readable for him, in so far as readability can be determined by ease or difficulty of structural elements. But there is a marked scarcity of material at this level, as shown by the responses to Chancellor's inquiry,<sup>20</sup> by the testimony presented in Dickerson's report,<sup>21</sup> and by the experimental findings in Gray's study of opportunity schools in South Carolina.<sup>22</sup> If the reader chooses Paragraph C, he claims ability to read materials that exist in abundance. This is the area of the popular novel and magazine, intended for the average or near-average reader. Should he choose a selection at Area D, he identifies himself as a relatively independent reader who can read whatever material interests him and who finds in structural elements no very serious handicap to understanding.

The accuracy of the reader's judgment concerning what he can read most effectively depends upon several circumstances. These include the approach made by the adviser, the reader's

<sup>20</sup> John Chancellor, *op. cit.*

<sup>21</sup> L. L. Dickerson, *Libraries and Adult Education*, p. 58. Report of a study made by the American Library Association. Chicago: American Library Association, 1926. Pp. 284.

<sup>22</sup> William S. Gray, Wil Lou Gray, and J. W. Tilton, *op. cit.*

willingness to co-operate, and the reader's power to discriminate between the paragraphs in a series. Other data may be used to check against the reader's judgment, such as last grade attended in school, last book read, best-liked book, magazine most enjoyed, and so on.

If we are to allow for the influence of other qualities than a reader's ability, then we must admit that a self-definition of ability may fail to be wholly reliable. For example, let us presume that a person is asked to read the second series of paragraphs. Suppose, further, that he knows very little about Africa, which is the subject of the series. Paragraphs C and D seem difficult, and he therefore chooses Paragraph B. Were another series of paragraphs presented, the content of which is directly related to his greatest reading interest, and about which he had read widely, he might select Paragraph C, and thereby define his ability quite differently and perhaps more accurately.

What we mean to emphasize is that information concerning one's ability as it is determined by this method may vary with interest in reading content, familiarity with the material, and other qualities that influence what one is able to read. The more closely the series corresponds to the field of the reader's interest, the greater the accuracy that may be expected.

In presenting these methods of determining how well a reader can read, we do not presume to say which is the best one to use. This depends upon the advisory situation. We can go no farther than to point out the advantages and limitations of each method. It remains for readers' advisers to put to practical test the method, or combination of methods, best suited to their own situations. To this end the selection of books may be made more effective through a careful definition of each individual's ability to read.

#### SELECTING READING MATERIALS OF APPROPRIATE DIFFICULTY

When the adviser has learned how well a patron can read and has interpreted his ability in terms of the difficulty of reading

materials, her next task is to select from available material that which most nearly approaches the desired level. Were reading materials distributed more evenly over the whole area of difficulty, the task would be far less complicated. Of materials used in the present study, relatively few were found to have an actual or predicted difficulty equivalent to Area A. A somewhat larger number rank at Areas B and D, and still more fall in the average area, C.

What to give the reader who finds "very easy" material adapted to his needs is a problem. It is perhaps more acute for the teacher or adults of limited reading ability than for the librarian. For the beginning adult reader frequently feels ineligible to library privileges. He reads what the classroom teacher recommends or what he is able to find independently. Much of the latter reading is not available in library or classroom, where materials are chosen for their literary worth. It is available at newsstand and cigar store in the form of wood-pulp magazines and cheap fiction. In these "literary" dregs is to be found adult content presented with a simplicity of expression which can be approached by nothing else in the field of adult reading save the few special adaptations shown in Figure 23. That many persons do read this kind of material, either from necessity or preference, is evidenced by the enormous circulation figures of magazines of low-grade fiction. How to guide the reading interests of such readers toward more wholesome satisfactions is the problem with which adult workers and librarians constantly are grappling.

But guidance in reading is far from being restricted solely to persons of limited reading ability. In the library it is as comprehensive as the patronage requesting it, and that, as we have said, represents a wide range of interests and abilities. Hence librarians and readers' advisers daily find themselves directing the reading activities of both good and poor readers. For, whether by one of the methods just described, or by intuition, librarians somehow do discover—in most cases, perhaps—who are the good, the mediocre, and the poor readers. And having

made such a discovery they recommend or select books which they believe will suit the needs of their patrons.

Undoubtedly much book-selection is made on the basis of inspection, sometimes with the book actually in hand, frequently from memory. Often, a hasty thumbing through the card catalogue or through book-lists, or a moment's reflective comparison of available books is enough, and the recommendation is made. Again, the librarian-adviser engages in painstaking search for an elusive article or book that promises to be the right one for a particular reader. She has catalogued it mentally as to content-appeal, difficulty, and other qualities which experience has shown are important in book selection.

Such practices as these are probably as old as the library itself. Often they result in the selection of the right book for a particular reader—the frequency of success probably being in direct ratio to the insight and efficiency of the adviser. Sometimes they fail. And it is in the failure of personal opinion that the need arises for a more objective means of selecting books suited to the ability of adult readers.

As we outline possible procedures for classifying books with respect to difficulty, we are assuming that such a classification will aid librarians, readers' advisers, and teachers of adults in selecting and recommending books for others to read. Whether our assumption is sound remains to be proved by a comparative study of book-selection as it is now carried on in specific situations and as it would be carried on through the aid of the more objective methods proposed in the following sections.

In the advisory situation set up at the outset of this chapter the reader's interest, it will be remembered, has been defined in his request. The task of the adviser, therefore, is to select from available material bearing on the reader's field of interest content suited to his reading ability. It is with this task in mind that we present various methods of classifying reading materials on the basis of structural difficulty. As was pointed out earlier, other factors which determine difficulty must ultimately be considered.

CLASSIFYING READING MATERIAL BY A PREDICTED  
INDEX OF DIFFICULTY

The most precise method now available involves the use of a regression equation, as illustrated in chapter vi. By such a technique an index of difficulty is determined for all widely read books or for all books that readers of limited ability presumably can read. These indexes give a means of classifying books into areas of difficulty ranging from "very easy" to "very difficult."

Recording the difficulty-value for a given book inside the cover or in the card catalogue gives a ready means of determining whether the book is appropriate in difficulty for a reader of given ability. Probably the numerical index, as well as its relative rank, should be recorded if the difficulty-value of a book is to be of greatest service in an advisory situation. The reason for this recommendation lies in the close relationship between difficulty-values of books at extremes of adjacent areas. As pointed out earlier, an average book (C) with a predicted score of .80, let us say, is not significantly more difficult than an easy book (B), with a predicted score of .86. For a reader of "B" ability, then, one book is about as appropriate from the point of view of structural difficulty as the other.

Since the time required to predict the difficulty of a single book may reach several hours, every effort should be made not to duplicate computations. Doubtless the best and the most economical service can be obtained through a central agency which will calculate the index of difficulty for each book, interpret this index in relative terms, and then transmit both types of information to librarians and teachers of adults. Such an agency was instituted in connection with the present study under financial sponsorship of the federal government. Its services were used in rating the difficulty of the 350 books listed in Appendix F.

This work represents only a beginning of what must be done in simplifying and improving the adviser's task of selecting materials suited to a reader's ability. More of the old books must be studied and their difficulty determined objectively. New



books need to be given an index of difficulty on accession. Pamphlets and brochures on a variety of topics should be rated for structural difficulty and made available for ready recommendation in guiding adult reading. Finally, of course, classification must be made on the basis of total readability for specific kinds of readers when the necessary objective information for such a classification will have been obtained.

RANKING READING MATERIALS FOR RELATIVE DIFFICULTY  
WHEN ELEMENTS ARE CONSIDERED OF EQUAL WEIGHT

Many investigators have attempted to determine reading difficulty by counting one or more significant structural elements inherent in the content. By this method, which has been described in chapter v, all elements are assumed to bear some relationship to difficulty. They are accordingly given equal weight in ranking materials, whereas they are given relative weight when combined into a single agency of prediction represented by the regression equation.

A few investigators have gone farther and have suggested tentative norms for different reading levels in terms of certain elements. Lewerenz, for example, has created grade norms on the basis of standardized tests and established a definite grade-placement for percentage of occurrence of words beginning with *w*, *h*, *b*, *i*, or *e*.<sup>23</sup> He has applied these norms extensively in determining grade-placement of newspapers, textbooks, fiction, and scientific books.<sup>24</sup> Since interpretation of the grade-placement is in terms of comprehension as measured by the Stanford Achievement Test, the method is more directly useful for grading children's reading than that of adults. Furthermore, the findings of this study do not point to a significant relationship between *w*, *h*, *b*, *i*, and *e* words and reading difficulty of adults.

Johnson has suggested tentative norms in percentage of poly-

<sup>23</sup> Alfred S. Lewerenz, "Measurement of the Difficulty of Reading Materials," *Educational Research Bulletin* (Los Angeles City Schools), VIII (March, 1929), 11-16.

<sup>24</sup> Alfred S. Lewerenz, "Objective Measurement of Diverse Types of Reading Materials," *Los Angeles Educational Research Bulletin*, IX (October, 1929), 8-11.

syllabic words in the different grades.<sup>25</sup> The use of this measure gives results corresponding to the rating of books on the basis of technical words, a method which was devised by Pressey.<sup>26</sup> Although polysyllables have been found in the present study to bear significant relationship to difficulty, other elements appear to give a more reliable single index of difficulty for adults.

Estimating the level of difficulty to which a particular book belongs, by use of elements of difficulty discovered in chapter iv, involves two steps: first, counting the number or percentage of certain significant elements as described in chapter v; and, second, comparing the average occurrence of these elements with the standard given in Table LXV, chapter viii, in order to designate the area of difficulty, A, B, C, D, or E. The standards shown in this table give the range of occurrence and the median occurrence of five elements as well as the variation of occurrence in terms of the upper and lower quartile. These measures were found to characterize materials at successive areas of difficulty. They were derived from the distribution of each element in books whose average reading-score falls within the area represented. A total of 350 books listed in Appendix F were used in obtaining these standards.

The steps to be followed in estimating difficulty by this method are:

1. Sample a book by selecting a series of passages approximately one hundred words in length, as before.

2. Analyze each passage for the occurrence of significant elements shown in Table LXV. The number of elements counted depends upon the degree of precision desired. If, for example, the use of three or four elements agrees with the standards of a particular level in Table LXV, the results may be accepted as adequate for all practical purposes.

3. Average the occurrence of the elements counted in the

<sup>25</sup> George R. Johnson, "An Objective Method of Determining Reading Difficulty," *Journal of Educational Research*, XXI (April, 1930), 283-87.

<sup>26</sup> L. C. Pressey, "Determination of the Technical Vocabulary of School Subjects," *School and Society*, XX (July 19, 1924), 91-96.

analysis to secure an average occurrence in an average hundred-word selection.

4. Compare the obtained averages with the standards shown in Table LXV.

5. Assign to the book the area of difficulty—A, B, C, D, or E—which it most nearly represents. Agreement with the upper quartile places the book at the difficult extreme of any level. Agreement with the median places it midway at any level. Agreement with the lower quartile ranks it at the easy end of any level.

Ranking by this method has been shown by limited investigation to be about as reliable as the use of a regression equation. A coefficient of .54 was obtained by correlating the relative ranking of several books of fiction with their absolute difficulty expressed in terms of the average reading scores made by adults of limited ability. A higher correlation of .66 was found between estimated difficulty of non-fiction materials and their absolute difficulty.

#### SCALING MATERIALS FOR DIFFICULTY

A third method of determining the difficulty of reading material involves comparisons with specimens which constitute a scale. For this purpose, the sample paragraphs representing Areas A, B, C, and D, on pages 244-45, are taken as a scale of difficulty. The difficulty of a particular book is the difficulty-value of the specimen of the scale which it most nearly resembles. This is determined by a technique of scale usage, which in the field of tests and measurements is designated the "ascending-descending" method.

The method requires that a sample paragraph from a particular book be moved from A, the lowest step on the scale, toward the higher steps until the judge decides that the specimen on the scale is more difficult than the paragraph being measured. He then begins with D, the highest point shown on the scale, and compares the paragraph with successively lower steps until a point is reached at which the specimen on the scale is easier than

the paragraph in hand. The paragraph then receives a rating represented by agreement between the two rankings or by an average of the two rankings. For example, if in ascending the scale, a paragraph is ranked C, and in descending, it is ranked B, its final value is either at the lowest extreme of C or the highest extreme of B. The number of paragraphs sampled from a book depends on the time available and the accuracy desired. One paragraph from each chapter is generally adequate. An average of the ranking of all the samples gives the index of difficulty for the entire book.

Since experience in the use of scales for other purposes has given evidence that two or more persons working together tend to secure more satisfactory results than does the independent worker, it is probable that more than one scaling is desirable. Even then the results for the present use are probably less precise than those obtained by the regression equation or by ranking on the basis of the occurrence of several elements of difficulty. That the reliability of scaling tends to increase with training and practice has been shown by previous investigation in other fields.<sup>27</sup>

In order to try out the foregoing method of scaling reading materials for difficulty, we enlisted the co-operation of two librarians interested in the plan. They were asked to scale twenty-five books for difficulty by two different techniques. The first involved the use of the Standard Oral Reading Paragraphs, which were scaled on the basis of the rate and accuracy of recognizing the words involved. The second involved the use of specimens from the Adult Reading Test, which were scaled on the basis of difficulty with respect to comprehension. In both cases, ten paragraphs of each book were scaled by the ascending-descending method, and the ten values thus obtained were averaged to give a difficulty-value to the book as a whole.

The first method was based on pure inspection, that is, on the visual matching of each sample paragraph with specimens on

<sup>27</sup> W. S. Monroe, J. C. De Voss, and F. J. Kelly, *Educational Tests and Measurements* (Boston: Houghton Mifflin Co., 1917), p. 158.

the scale. The second introduced analytical judgment of comprehension, that is, a comparison of the elements which influence difficulty of comprehension as they occur in the sample paragraph and in the specimens on the scale. Both methods resulted in notable agreement, the ratings tending to draw closer and closer together as the scaling was continued. Conferences between judges also tended to give uniformity to their ratings.

Both judges expressed a preference for the second method. They agreed that an analytical study of elements of difficulty accompanying the scaling process leads to greater accuracy than pure inspection. A skilful reader, they contended, cannot make comparisons easily without comprehending the meaning of the passage. It is therefore a more familiar exercise than the visual matching involved in sheer inspection.

Since the judges felt more assurance in using the second method than the first, it actually took less time to analyze and compare the paragraphs for difficulty of comprehension than to scale them by general impression. It must be admitted that at the outset both judges were somewhat skeptical of arriving at any uniformity of rating by either method. At the termination of several practice periods distributed through three or four weeks, they expressed a confidence that the second method would prove helpful in recommending books for adult readers whose reading ability could be estimated.

Although it is important to discover that librarians agree on the difficulty-value of a selection, it seems more important to discover how reliable the value is on which they do agree. That is to say, if they agree in their scaling, for example, that *Cimarron* belongs at Area C, is their scaling correct? Or does *Cimarron* belong at Area B? It is at this point that the scaling method of determining difficulty falls short of the two methods presented in previous sections. We have calculated reliability coefficients to prove just how reliable will be the index of difficulty obtained by use of the regression equation or by mere counting of significant elements. The same degree of reliability, then, may be expected for the difficulty-value of any book determined

by any person, granting his ability to do the simple arithmetical processes necessary. Scaling, on the other hand, involves a certain degree of subjectivity. The extent to which this may be reduced determines, for the most part, the reliability of the values thus obtained.

We have some evidence bearing on this procedure obtained from the experiment just reported. Most of the twenty-five books which the librarians scaled for difficulty had already received an absolute difficulty-value from testing. It was possible, therefore, to estimate the reliability of the values assigned by the librarians. Not only did scaled values obtained by analysis tend to agree more frequently with absolute values than did those obtained by pure inspection, but variation from absolute values tended to be less. It appears, then, that scaling can be refined, if inspection is supplemented by comparing certain elements of difficulty in the sample paragraph with those in specimens on the scale. As in earlier techniques, the elements used for comparison include different hard words, personal pronouns, average sentence-length, percentage of different words, and prepositional phrases. Care should be taken to utilize paragraphs of a length comparable to that of the specimens and to express the occurrence of the elements as a ratio of one hundred words.

Whatever the method used to classify materials for difficulty, it must be not only economical of time for librarians and advisers but reliable enough to prove a valuable aid in selecting the right book for the right reader.

#### SUMMARY

This chapter has proposed several methods for the use of librarians, readers' advisers, teachers of adults, and other persons who are called upon to select materials of appropriate difficulty for adult readers. Each method assumes that two types of information are essential. One type is concerned with how well a particular adult can read, the other, with how easy or difficult is available material bearing on the field of the reader's interest.

Each method further assumes that these two types of information will be most useful if they are translated into common terms whereby a definition of reading ability automatically identifies materials of appropriate difficulty.

Although the chapter has suggested techniques intended to improve the selection of readable books, it does not claim to solve the whole problem. It has, rather, reduced the total problem of selection by a consideration of one aspect, that of fitting materials to the reader's ability when fitness is defined in terms of appropriate structural difficulty. Beyond this, the chapter has gone no farther than to indicate the kind of procedure needed: first, in securing other information about a book than difficulty; second, in reducing such information to a common denominator of quality or quantity; and finally, in utilizing it in the selection of a book a particular kind of reader will find readable.

How valuable these procedures may be in actual practice remains to be determined. Each must be submitted to experimentation in advisory situations of library and classroom. This is necessary in order to discover whether the findings with respect to structural difficulty actually improve the selection of materials for particular readers. If evidence is found to prove their practical importance, then there is promise that the identification of other aspects of readability may objectify and simplify the task of selecting appropriate reading materials for different classes of readers.

## CHAPTER VIII

### HOW TO PREPARE READABLE MATERIALS

**I**N TURNING from the problem of selecting readable books to the problem of preparing readable books, we are led to ask a number of questions. What sorts of readable books are now available? What qualities shall be considered in preparing a book that is readable? What steps have been taken to improve the readability of books for adults of limited education? With what success have readable books been prepared for such readers? How can information concerning elements of difficulty be used in making books readable for adults of limited schooling?

Most of these questions pertain to the problem in general. The last question points to one aspect of readability—ease of reading—and asks how findings obtained by this study may be used to improve the readability of books for adult readers in general and for adults of limited education in particular.

So much has been said throughout this report of the need for readable books that there is danger of being misunderstood. We are not implying that there are no readable books. All of us have read and are reading them. We have little trouble in labeling a book readable or unreadable for ourselves, despite the lack of a thoroughgoing definition of a readable book. We are less confident about readable books for others. As has been frequently repeated, to label a book readable is to imply knowledge of the reader, his interests, needs, tastes, and abilities. It further implies knowledge of the book—details of content, style, format, organization—all the aspects that may make a book easy and pleasant for a particular person to read.

#### READABLE BOOKS ARE OF MANY KINDS

What are the books that we find readable? They are of many kinds—books of fiction and books on art, history, philosophy,



economics, geography, psychology, as well as other more or less specialized subjects. Some readable books are intended for "in-school" use in adult classes; many more are for general "out-of-school," voluntary reading. They tend to present fiction more often than fact. Occasionally a readable book is also a "good" book; more often it is, as Cheney has said in his survey of the book industry, "one of hundreds which are good possibilities, badly botched, or bubbles cleverly ballyhooed."<sup>1</sup>

The reason seems clear. The good, readable book for out-of-school reading has been too long the accidental product of a writer who has the intuition to "sense" his reader's mind or who can dissolve the jargon of a timely topic into language the man of the street can understand. The good readable book for in-school use has been the outcome of observations of particular groups and analyses of what they need to read and what they want to read. Few writers have found the secret of writing readably for large groups of readers or, having found it, know that they have it. A large number, on the other hand, fall short of writing readably. This is true not because they lack the potentialities for doing so. It is, rather, because, being engrossed in ideas, they unconsciously neglect words and phrases which make ideas easy and pleasant for the largest possible audience to read. Their books may be "good," but they are not readable. These are the writers who presumably will profit most from knowledge of what qualities make a book readable for a particular class of readers.

#### FEW BOOKS ARE AVAILABLE FOR ADULTS OF LIMITED ABILITY

Directors and teachers of organized classes for adults are vigorous in their contention that the educational progress of adults of delayed schooling depends in a measure upon the preparation of more material to meet their needs. These teachers and directors are demanding books of adult interest. They want brief

<sup>1</sup> O. H. Cheney, *Economic Survey of the Book Industry, 1930-31* (New York: National Association of Book Publishers, 1931), p. 98.

books dealing with social and economic themes, presented in simple form and style, and graded to conform with successive stages of progress to the point where systematic instruction ends.

Chancellor's inquiry shows that attempts to provide adults of limited education with readable material for instructional use have met with varying degrees of success. Textbooks written particularly for use in Americanization classes commonly receive two sorts of criticism. One is directed against the patronizing or childish style in which the rudiments of information bearing on American life are presented. The other criticism points to the rapid increase in difficulty which makes the book unreadable for the beginning reader of English. In some books the difficulty progresses from primer level to the approximate level of fourth grade, all within a range of two hundred pages or less. There is little or no opportunity for the learner to gain fluency at one level before proceeding to the next.

In some few instances these criticisms are obviated by grading the reading material within a series rather than within a single book. But graded series of adult books are rare. Of the few now available, the last book in the series tends to be least satisfactory. It assumes a maturity of reading habits far beyond what teachers of adults claim can reasonably be attained by the use of the earlier books in the series. Slow progress in reading is the inevitable result. With more adequate information concerning the elements related to difficulty for adult readers, textbooks can be graded more satisfactorily. For grading is a matter of method. And method of how a thing is to be accomplished depends upon what is to be accomplished. We may argue, therefore, that a definition of qualities which make a book readable for certain classes of readers is the first step in preparing textbooks whose readability is attained not by chance but by design and whose use will promote progress in reading for adult learners.

As already indicated, librarians are vigorous in their plea for simple, out-of-school reading materials for adults of limited ex-

perience with books. What to select for men and women who have done little or no serious reading, yet who suddenly show interest in an informational field, is a perplexing problem. They want books on Technocracy, Inflation, National Defense, War Debts, the New Deal, and other timely topics. But what is available on these subjects? Too often nothing more than profound discussions of basic principles or abstract statistical treatises. Frequently these are presented in an involved and obscure style baffling to the reader whose understanding depends upon concrete, human content, simply and lucidly written.

Objective evidence presented in Figure 23, chapter vi, supports the testimony of librarians and teachers of adult classes to the effect that the supply of readable books for readers of limited ability is now inadequate. The figure indicates roughly the relative amount of material available at Areas A, B, C, D, and E. Within some limitations it shows that many books are readable at Area C, whereas the number at Area A is undoubtedly limited. We do not mean to imply that difficulty is the predominant aspect of readability nor that a classification on that basis presents the whole picture. Such a classification, however, probably does more than hint at gaps in the long up-grade from the adapted *Robinson Crusoe* to *Jean Christophe*.

Figure 23 also makes clear that many so-called "easy" books must be made still easier if the adult who is just beginning to read is to find material which will make possible his continuous reading progress. What are commonly designated "better" books of biography, history, economics, and science need to be written in a simplicity of language and brevity of statement that are comprehensible to the reader of lesser ability who hopefully attempts to eke out limited education by voluntary reading.

#### CAN "BETTER" THEMES BE PRESENTED SIMPLY?

A brief survey of experiments now being carried on gives proof that "better" themes can be presented simply. In the field of newspaper writing, we have *American News* which prints

"the news of the week in Swenson's 900 words." Here we find such so-called difficult subjects as "money plans," "recovery plans," "preparation for war," and so on, presented in a way that reduces vocabulary difficulties to a minimum. The material ranks in difficulty at Area B, as shown by a predicted score of 1.14. This score is obtained by use of five elements: different hard words, personal pronouns, sentence-length in words, percentage of different words, and number of prepositional phrases. Greater simplicity might be effected in this newspaper by decreasing the average length of sentences and reducing the number of prepositional phrases.

A second literary experiment is Ilin's *New Russia's Primer*, which illustrates a recent attempt in Russia to enlighten millions of untutored persons concerning themes of great social significance. Vital content, dramatic style, and simple expression have been combined to produce a book readable for Russian children from twelve to fourteen years of age. The English translation by Counts and Lodge may be somewhat more difficult for the reason that the translators have aimed primarily to preserve the spirit and substance of the original rather than its simplicity. However, the difficulty of the translation is probably not greatly increased, as shown by the ranking of the English version at Area B in Figure 23, chapter vi. This is the area which we have designated tentatively as appropriate for the intermediate grades.

A third experiment worthy of mention is the simplification of standard novels for adults who cannot read the originals. Not all simplifications have been endorsed as readable for the class of reader for whom they are intended. Frequently the adapted book is an abridgment of the original which possesses qualities of interest and literary worth but which lacks simplicity of expression. In some cases this abridgment is difficult for adults of limited reading ability, for the reason that extent of vocabulary, length and form of sentences, and other elements have not been simplified enough to effect a satisfactory ease of reading. For example, the predicted difficulty of Michael West's adapted

*Treasure Island* is approximately that of Stevenson's original edition, when difficulty is measured by the occurrence of certain structural elements. The index of difficulty predicted for the former is .69; for the latter, .64. The chief difference between the two versions, as shown in Table LIX, is in the number of different hard words. This difference is the result of the author's intention to bring the original novel within the vocabulary of

TABLE LIX  
AVERAGE OCCURRENCE OF FIVE ELEMENTS OF DIFFICULTY IN  
HUNDRED-WORD SAMPLINGS OF TWO VERSIONS  
OF *Treasure Island*

Original (Predicted Score, 0.64)	Elements of Difficulty	Adapted (Predicted Score 0.69)
20.2	Number of different hard words	13.0
9.92	Number of personal pronouns	10.4
28.3	Average length of sentence in words	29.2
68.0	Percentage of different words	69.5
11.7	Number of prepositional phrases	9.0

the *New Method Readers* 1A-V. This vocabulary contains 1,779 words, of which 1,669 are among the 2,000 commonest words in the English language.<sup>2</sup>

A second illustration of the relatively slight modification made in structural difficulty may be found in the adaptation of *Moby Dick*, by Sylvia Chatfield Bates. The predicted difficulty of the original is 0.28, which ranks the book at Area D. The adapted text has a predicted score of 0.75 which gives it a ranking at Area C. The most marked difference between the two books is found in length. Melville's *Moby Dick* is a long novel of some 500 to 600 pages. Bates has told the gist of the story in about 115 pages.

Differences in the occurrence of structural elements may be seen in Table LX. It presents the average occurrence of each

<sup>2</sup> Michael West, *New Method Readers for Teaching English to Foreign Children*, Descriptive Booklet. London: Longmans, Green & Co., 1929. Pp. 76.

element in a series of hundred-word samples, one from each chapter of the two books. But three elements appear to be markedly changed by simplification: percentage of monosyllables, percentage of simple sentences, and average sentence-length in words. A relatively high percentage of different words persists in the simplified text despite the author's effort to reduce the range of vocabulary through the use of two word-lists,

TABLE LX  
AVERAGE OCCURRENCE OF SEVEN ELEMENTS OF DIFFICULTY IN  
HUNDRED-WORD SAMPLINGS OF TWO VERSIONS  
OF *Moby Dick*

Original (Predicted Score, 0.28)	Elements of Difficulty	Adapted (Predicted Score, 0.75)
29.1	Number of different hard words	22.2
42.0	Percentage of monosyllables	75.4
73.5	Percentage of different words	70.9
27.0	Percentage of simple sentences	51.0
32.2	Average length of sentences in words	18.2
8.7	Number of personal pronouns	9.8
11.3	Number of prepositional phrases	10.3

Rejall's 4,000-Word List and the first 5,000 words in Thorndike's List. The range of selection possible from these two lists obviously does not insure a highly restricted vocabulary.

What changes have been made in adapting other classics for readers of meager reading experience? Tables LXI-LXIV answer this question for four books: *Robinson Crusoe*, *Silas Marner*, *Les Miserables*, and *The Vicar of Wakefield*. Predicted scores for the first three original texts, -0.26, 0.13, and 0.20 respectively, place them at Area E with respect to structural difficulty. This is the area of "very difficult" books. The predicted scores for the same three adapted texts, 2.06, 1.24, and 1.26, rank them at Area A. They are "very easy" books, representative of the simplest material now available for adults. A considerably less degree of simplification is manifested by West's adaptation of *The Vicar of Wakefield*. Its predicted score, .82, marks it an

"easy" book as against a score of .25 for the "difficult" original version. It is evident from the tables that the difficulty of the original *Robinson Crusoe* lies in length and structure of its sen-

TABLE LXI

AVERAGE OCCURRENCE OF SEVEN ELEMENTS OF DIFFICULTY IN  
HUNDRED-WORD SAMPLINGS OF TWO VERSIONS  
OF *Robinson Crusoe*

Original (Predicted Score, -0.26)	Elements of Difficulty	Adapted (Predicted Score, 2.06)
19.3	Number of different hard words	6.0
76.9	Percentage of monosyllables	83.3
67.0	Percentage of different words	41.4
4.0	Percentage of simple sentences	32.0
74.5	Average length of sentences in words	12.0
12.3	Number of personal pronouns	13.5
11.1	Number of prepositional phrases	9.8

TABLE LXII

AVERAGE OCCURRENCE OF SEVEN ELEMENTS OF DIFFICULTY IN  
HUNDRED-WORD SAMPLINGS OF TWO VERSIONS  
OF *Silas Marner*

Original (Predicted Score, 0.13)	Elements of Difficulty	Adapted (Predicted Score, 1.24)
28.3	Number of different hard words	14.6
72.0	Percentage of monosyllables	75.8
71.9	Percentage of different words	65.5
14.0	Percentage of simple sentences	46.0
41.7	Average length of sentences in words	12.0
9.3	Number of personal pronouns	13.4
12.0	Number of prepositional phrases	6.7

tences. These two elements have been notably simplified. *Silas Marner* and *Les Miserables* illustrate what an author can accomplish by modifying several elements in the direction of simplicity of expression.

A fourth experiment—the writing of scientific and other types of material in basic English—represents an effort to present better themes simply. It will be commented upon later in its relation to the Basic English Vocabulary List.

TABLE LXIII  
AVERAGE OCCURRENCE OF FIVE ELEMENTS OF DIFFICULTY IN  
HUNDRED-WORD SAMPLINGS OF TWO VERSIONS  
OF *Les Misérables*

Original (Predicted Score, 0.20)	Elements of Difficulty	Adapted (Predicted Score, 1.26)
29.9	Number of different hard words	8.0
5.7	Number of personal pronouns	13.0
41.2	Average length of sentence in words	10.9
68.3	Percentage of different words	66.4
13.1	Number of prepositional phrases	8.5

TABLE LXIV  
AVERAGE OCCURRENCE OF FIVE ELEMENTS OF DIFFICULTY IN  
HUNDRED-WORD SAMPLINGS OF TWO VERSIONS OF  
*The Vicar of Wakefield*

Original (Predicted Score, 0.25)	Elements of Difficulty	Adapted (Predicted Score, 0.82)
25.8	Number of different hard words	20.0
10.3	Number of personal pronouns	13.9
35.6	Average length of sentence in words	18.8
73.0	Percentage of different words	70.2
12.8	Number of prepositional phrases	10.3

#### WHAT SHALL BE CONSIDERED IN PREPARING A READABLE BOOK?

The four experiments just mentioned seem to point to a definite tendency among a few authors to write down to the under-educated millions who lack the reading experience of the larger proportion of adults. What is the secret of writing readably?



Is it some kind of a magic art? Or is it a technique acquired through persistent effort to create that which a particular audience will find easy and pleasant to read? For example, do Will Rogers and Arthur Brisbane possess a peculiar gift of selecting topics of high social, civic, and personal interest and of presenting them simply and vitally? Are these two writers consciously aiming to reach the masses rather than the more discriminative reader? Whatever the answer, there is no denying that they are writing what the reader of *Dream World* can read and understand and what the reader of *Atlantic Monthly* may read if he chooses.

Evidence in support of this statement is shown by Lewerenz, who has secured interesting facts relative to the degree of simplicity characterizing certain types of newspaper material. He has graded the material for vocabulary-difficulty by the use of a grade-placement formula described earlier.<sup>3</sup> His findings show that in Will Rogers' "Remarks" there is found a vocabulary diversity adapted to a reading grade-level of 4.6. According to Lewerenz this is about the level represented by the ordinary comic strip. Brisbane's news comment "Today" contains a diversity of vocabulary which is equivalent to grade 6.2. This is the level generally maintained by editorials in the newspapers read most widely by the working-class. It is also the level of local and sporting news—a level at least two years below the editorials found in newspapers most commonly read by professional and business groups.

If we examine the writings of Rogers and Brisbane we discover other qualities than clear words and brief sentences that presumably are related to readability. These writers are interpreters of the news. Their field is the universe and all that is in it. They present their subjects briefly, directly, and vividly. Their style is simple and unpretentious; their tone, informal and personal. How much each of these qualities contributes to making their writing readable, we cannot say. For one reader sim-

<sup>3</sup> Alfred S. Lewerenz, "Vocabulary Grade-Placement of Typical Newspaper Content," *Los Angeles Educational Research Bulletin*, X (September, 1930), 4-6.

plicity of expression may be paramount in making the material readable. For another, simplicity may be of less consequence than the concreteness of the story. For still another, it may be the subtle force of these writers that makes what they write readable. There is apparently need for research concerning communication of thought through print as there is concerning communication by radio or by any other medium, to discover the qualities most useful in reaching different classes of audiences.

If, for example, the format of a book adds to readability, we need to know further the size of book, the color and quality of its binding, the number of pages, and other features most desired by different classes of readers. Undoubtedly the format of *Les Miserables*, *Silas Marner*, and *Robinson Crusoe* (adapted) makes them far more readable for adults of limited reading ability than they were originally.

Writers and publishers need to inquire further concerning the size of type and the kind of illustration preferred by different readers. If organization contributes to readability, how do different classes of readers want a book organized? Are paragraph headings desirable at Area B, let us say, and not at Area D? Do footnotes confuse the reader of materials at Area A, but not the more able reader of materials at Area D? From the point of view of content, what theme is of greatest interest to different readers? Is the general topic better suited to one class than to another? Should a theme be defined more narrowing for readers of books at Area A? What is the nature of the concepts that can be comprehended by readers who are limited to Areas A and B?

In regard to style, the writer should ask such questions as: What class of reader finds realism pleasing and phantasy baffling? Is narration more readable at one level than is description? How far does a personal, informal style improve readability for particular readers? What structural elements interfere with ease of reading? What kind of vocabulary is most readable at a particular level? To what degree are length and form of sentence

related to ease, and hence to readability for different classes of readers?

Some of these questions and others of a similar sort have been investigated in the field of children's reading with the result that materials for children show marked improvement in readability. If they can be answered with the same or with a greater degree of definiteness in the field of adult reading, it seems reasonable to anticipate two major outcomes: one, the formulation of principles of readable writing for use in preparing books for different kinds of adult readers; and the other, the ultimate development of standards by means of which existing books may be judged readable.

WHAT CONTRIBUTIONS HAVE SCIENTIFIC STUDIES  
MADE TO THE PROBLEM OF PREPARING  
READABLE MATERIALS?

For many years the fact has been recognized that books for children must be adapted to successive reading levels. Publishers of juvenile books, especially textbooks, have been striving to create educational and recreational material suited to the needs and interests of children of various ages. Previous to the development of scientific techniques in 1910, it was difficult to determine objectively when a book was appropriate for children at a particular age- or grade-level. Subjective opinion dominated. Publishers and authors largely felt their way along.

Gradually objective evidence has accumulated with respect to the reading attainment which may be regarded as normal at each grade-level, the vocabulary usage and other language habits of children of different ages, and the reading interests and preferences which characterize successive stages of child development. Concerning reading material, evidence is now available relative to several fundamental aspects. Among these are the color, size, and general appearance of a book which children of certain ages find most attractive; the kind of illustrations which appeals to them; the length and kind of sentence and the extent of vocabulary best fitted to their successive stages of

progress; and the size of type which they find most readable at different grade levels.

With these data at hand, writers and publishers are producing increasingly more readable textbooks and supplementary books for children's use in the classroom. Much is still to be desired in making the general trade book readable for children at different stages of reading progress.

Considerably less has been accomplished in the grading of reading material for adults. The reasons are many. The most important, perhaps, is that there has been a certain apathy toward adult reading. If a person reached maturity without having learned to read, the fact was recognized, but practically nothing was done about it. If he could read but didn't read, it was because he "never cared for reading" or "never had time to read," or "never could find anything he wanted to read." These pseudo reasons settled the matter.

During the past few years public attitude has changed. We have begun to examine the character of adult reading and to inquire concerning the facts related to it. Organized attempts at adult education and self-directed efforts toward the same end have opened up new opportunities for the scientific study of the subject. Barriers to investigation increasingly diminish as we become accustomed to fact-finding techniques. Most of us willingly admit our reading tastes and preferences and the nature of our reading habits, for we know that the information we give will be lost in the composite responses of thousands of other persons.

Some of the facts now available pertain to the reading interests and habits of adults. Others relate to adult reading material—to its vocabulary "burden" and to other elements now recognized as indexes of ease or difficulty. Still others present a graphic picture of the problems and processes of book publication. It is through the utilization of all these outcomes of scientific research that writers and publishers will be able to prepare a greater number of readable books for different classes of readers. A brief summary of important studies and their implica-

tions for writers and publishers is given in the sections that follow.

WHAT HAS BEEN DISCOVERED ABOUT THE READING  
INTERESTS AND HABITS OF ADULTS?

Reference has been made earlier to the initial report by Gray and Monroe on the reading interests and habits of adults.<sup>4</sup> This study has contributed to an understanding of such topics as the status of reading in American life, the amount and character of material read, the interests and motives of adult readers, the influences that affect the development of reading interests and motives, and the importance of establishing permanent reading habits early. Inasmuch as these facts are broad and general, their chief value to publishers is to emphasize that more analytical studies must be made if books are to serve the varied needs and purposes of a wide range of readers.

One aspect of the entire problem of adult reading reported by Gray and Monroe pertains to interests of adult readers. Obviously, what people want to read about is something which publishers should know. Much information is now provided by Waples and Tyler, who have made a detailed study of the problem.<sup>5</sup> They have compiled group scores to be used in identifying the groups most interested in a given subject of non-fiction.

Suppose a publisher plans to produce a book on foreign trade. What groups may he expect to interest? The evidence from Waples' study shows that prisoners, farmers, factory girls, and college students will have little or no interest in it. High-school teachers, telephone operators, commercial students, postal clerks, and others will evidence average interest in it. But no group will be highly interested.<sup>6</sup> This does not mean that these groups will not read the book, for Waples has discovered that

<sup>4</sup> William S. Gray and Ruth Monroe, *The Reading Interests and Habits of Adults*. New York: Macmillan Co., 1929. Pp. 305.

<sup>5</sup> Douglas Waples and Ralph W. Tyler, *What People Want to Read About*. Chicago: University of Chicago Press, 1931. Pp. 312.

<sup>6</sup> *Ibid.*, p. 62.

the correlation between what one wants to read and what one actually reads, although positive, is not significant.<sup>7</sup> What the evidence does mean is that publishers cannot expect the same degree of interest in a book on foreign trade as in one on prices and cost of living, let us say. This latter topic, according to Waples and Tyler, is one of more general interest for adult reading. Hence, it stands a greater chance of being read.

#### VOCABULARY NEEDS AND READABLE WRITING

Notable contributions to the intricate problem of readability are found in standard vocabulary-lists which are the products of scientific investigation. The Thorndike list of 10,000 words, published in 1921, was the first contribution of value to writers and publishers in determining the frequency and importance of words in printed material.<sup>8</sup>

In compiling this list and his later one of 20,000 words,<sup>9</sup> Thorndike has made two assumptions. The first is that his materials from which words are selected are representative. The second is that the most frequent words are the most important. Although these assumptions have been frequently challenged, much evidence has been found to support them. For example, the most frequent thousand words in Thorndike's list have a high frequency of occurrence in all types of material, both literary and scientific.<sup>10</sup> The conclusion seems warranted that adult reading necessitates familiarity with at least the first thousand words on his list, but that writers and publishers can presumably place less confidence in the importance of words classified beyond the first thousand.

There is a tendency to compile basic vocabulary lists for the

<sup>7</sup> Douglas Waples, "The Relation of Subject Interests to Actual Reading," *Library Quarterly*, II (January, 1932), 42-70.

<sup>8</sup> E. L. Thorndike, *The Teachers' Word Book*. New York: Teachers College, Columbia University, 1921.

<sup>9</sup> E. L. Thorndike, *The Teachers' Word Book of 20,000 Words*. New York: Teachers College, Columbia University, 1931.

<sup>10</sup> Edgar Dale, "Evaluating Thorndike's Word List," *Educational Research Bulletin* (Ohio State University), X (November 25, 1931), 451-57.

purpose of modifying the vocabulary difficulties of adults who are either learning or who have just learned to read. Some of these lists have special application to reading materials for foreign-born adults.

Cornell has prepared a tentative list of 227 words as a beginning reading vocabulary for such persons, with special reference to those who cannot read in any language.<sup>11</sup> The list is composed of 164 words common to five textbooks for adults and to the first 500 words either of the Thorndike or the Gates list;<sup>12</sup> 25 words in the first 100 of Thorndike and Gates not found in the five texts; 16 words that seem necessary to complete concepts, even though they do not appear in either of the first two classes; and 22 street signs. Cornell intended that her list be used not only to provide a basic vocabulary for beginning reading but also to furnish a basis for classification of adults for early instruction in reading. In preparing first lessons in reading for foreign-born adults learning to read English, the list seems to promise valuable help.

Swenson's more recent list of 300 English words has been prepared with the view of formulating a minimum vocabulary for foreigners learning to speak English.<sup>13</sup> According to the findings of the Language Research Committee, who co-operated in its compilation, the 300 words are all a foreigner needs in asking for the things necessary for existence. Frequently this list is used also in teaching foreigners to read. In such instances, its adequacy is open to question. Three hundred words can hardly give an understanding of the printed information found in an English-speaking community. A longer list seems essential to carry the mere beginning of English usage to mastery in either speaking or writing. Such a list known as "Swenson's 900

<sup>11</sup> Ethel Cornell, *A Beginning Reading Vocabulary for Foreign-born Adults with Special Reference to Those Who Cannot Read in Any Language*. University of the State of New York Bulletin, No. 948 (Albany, New York: University of the State of New York, 1930), p. 24.

<sup>12</sup> Arthur I. Gates, *A Reading Vocabulary for the Primary Grades*. New York: Teachers College, Columbia University, 1926. Pp. 24.

<sup>13</sup> Elaine Swenson, "Swenson's 300 Words," *New York Times*, November 5, 1933.

Words" is being used in a project described earlier, which aims to print the news of the week so that beginning readers may read it understandingly.

A more extensive word-list than either of the preceding two has been prepared by Rejall.<sup>14</sup> This list includes 4,000 words which every citizen and voter should know. The complete vocabulary is divided into an elementary list of 1,000 words, an intermediate list of 1,500 words, and an advanced list of 1,500 words. These sub-lists are primarily for the use of teachers in selecting the essential words to be taught in progressive order. Word recognition in silent reading rather than oral pronunciation is the basis for testing a foreign student's knowledge of words in the list. Writers of textbooks for use in Americanization classes frequently aim to utilize the 4,000 words in this list.

From his work among Oriental students of English, Faucett has come to regard about 1,500 words as the minimum vocabulary for reading and understanding.<sup>15</sup> They are the "wide range" words which comprise almost all the form-words needed in normal and modern English prose. Stated in another way, they are the *indispensable* and *essential* words which together make up over 75 per cent of the word-occurrences in normal English and constitute its great linguistic framework. Beyond this framework are the "narrow-range" words, that is, the *useful* and *special* words whose word-value make them neither *indispensable* nor *essential*.

This word-list is intended, according to its compilers, to be "useful to those interested in establishing the minimum vocabulary to be incorporated in all series of readers, in fixing a graded vocabulary scale for supplementary readers, in furnishing examiners and school inspectors with a measuring rod, in helping teachers and students to develop a sense of word-values, and in

<sup>14</sup> Alfred E. Rejall, "Reading Vocabulary," *Thirty and One Reading Tests for Voters and Citizenship* (New York: Noble & Noble, 1926), pp. 49-69.

<sup>15</sup> Lawrence Faucett and Itsu Maki, *A Study of English Word-Values Statistically Determined from the Latest Extensive Word-Counts*. Tokyo, Japan: Matsumura San-shodo, 1932. Pp. 252.



making possible standardized tests.”<sup>16</sup> Although an arbitrary fixing of the limit of narrow-range words may inflict an injustice on writers of textbooks and of general trade books for new literates, yet the minimum use of such words and the more extensive use of wide-range words would seemingly produce a more readable book than is possible by indifference to word-values.

Ogden’s Basic English vocabulary aims to meet the international need at two different stages.<sup>17</sup> One is the stage of ordinary communication which Ogden claims may be achieved in idiomatic English through the use of 850 basic words and 124 international words. The other is the more advanced stage of scientific internationalism, achieved by means of the 850 basic words, 300 international words, an additional 100 words for general science, and 50 more for any particular science. A great economy is claimed in learning a number of phrases composed of the same few words arranged in a different order over learning a number of different words. For this reason it appears that the foreign-born adult will be less handicapped by difficulties of vocabulary in reading basic material than in reading other types of materials provided that he has mastered the basic words. Actually, however, such is not the case. As critics have pointed out, there are “stretchings” and shifts of meaning which a reader must acquire if he is to understand basic materials.<sup>18</sup> And these stretchings involve the same or about the same amount of learning effort as new words.

The few translations into basic English now available have been made for two purposes. One is to furnish practice for the learner of the new language. With this purpose we are not greatly concerned here. The other is to experiment in the writ-

<sup>16</sup> *Ibid.*, p. 8.

<sup>17</sup> C. K. Ogden, *Basic English*. London: Kegan Paul, Trench, Trubner & Co., 1932. Pp. 96.

<sup>18</sup> Michael P. West, E. Swenson, and Others, *A Critical Examination of Basic English*, Bulletin No. 2 of the Department of Educational Research, Ontario College of Education, University of Toronto. Toronto: University of Toronto Press, 1934. Pp. 53.

ing of books in an abbreviated language.<sup>19</sup> No claims are made for literary excellence of translations into basic English beyond what the originator of the language ascribes "to the rigid economy of words, which may be held by some to present a wholesome antidote to the prevalent verbosity." How much the practice of so rigid an economy, if such there is, may destroy the pleasure of a book and make it less readable has not yet been ascertained.

Since the 850 basic words are designed to furnish the widest possible range of substitutes for other words, together with a minimum inventory of common objects, they are not necessarily short words, nor are they "easy" words as that term has been defined in the present study. Furthermore, inasmuch as translators of basic English are concerned primarily with the usage of a simplified language, their use of other structural elements related to difficulty or ease of reading is apparently more a matter of chance than intention. Table LXXXV, on page 343, shows that *Carl and Anna* ranks in difficulty at Area B. This is the area of difficulty of reading materials which persons of fourth-, fifth-, and sixth-grade reading ability normally can read with ease and understanding. Other basic translations, however, have been found to rank at higher areas of difficulty. It appears, therefore, that although basic English as a literary medium may produce easy reading, the level of difficulty is not the same for all translations.

An examination of the various vocabulary-lists just described shows that they do not agree. Some are short. Others are long. In one case the list is derived from an analysis of general reading. In another it is compiled from an analysis of such practical sources as political and historical documents and papers, literary requirements of certain states, and reports from teachers of adult classes concerning vocabulary needs of their pupils. In some cases, words common to two lists are designed to meet

<sup>19</sup> C. K. Ogden, "Basic English as an International Language," *New Era*, Vol. XIV, No. 1 (January, 1933), pp. 15-17.

both conversational and reading needs. Others are intended primarily to provide a basic reading vocabulary.

Which list or lists, then, is a writer or a publisher to use? And how shall he use them? The answer to the first question is determined by the audience he means to serve. Is it the foreign-born adult who cannot read in any language? Or is it the foreigner who can read in his native language and who is learning to read English? Or, again, is it the one who is learning to read and speak English simultaneously? Is it the native-born adult who is just learning to read? Or is it the reader who is improving his reading ability? Is it the Oriental student of English? For all these types of reading audience, the first few hundred words in the Thorndike list are useful, since they are common to all reading needs. For a specific reading audience, suitable words may be determined by reference to other lists. It is probable that any carefully prepared list represents a considerable advance over the judgment of an individual author or publisher regarding the importance of a word.

With respect to the second question, it seems reasonable to believe that material will be generally more readable for a particular group if the vocabulary is guided by the use of the most suitable list. Teachers of adults generally take the position that if basic lists were supplemented by words common to the adult experiences of particular groups, their usefulness would be extended. Further research is needed to determine what words represent adult motives, attitudes, and activities common to different racial and sectional, occupational and cultural groups. When adult word-lists of this sort are prepared, we shall probably re-define "easy" and "hard" words on the basis of their familiarity for adults as measured by adult experience.

Vocabulary-lists, then, represent an advance step in making books more readable for adults of limited reading experience. But vocabulary diversity is only one element related to difficulty of reading, and hence to readability. And attention to one element is not enough. We may restrict our writing vocabulary and still produce material that presents obstacles to the reader. The words may be difficult because they are long or unfamiliar.

The difficulty may lie in the use of long and involved sentences, frequent prepositional phrases, figures of speech, and other indexes of difficulty. It may be influenced by an absence of easy words, personal pronouns, short and simple sentences, and other indicators of ease. Or, again, it may lie entirely outside the realm of structural difficulty in some distracting aspect of content, format, style, or organization.

That significant differences in difficulty may exist among materials having a common vocabulary is shown by the selections which follow. These paragraphs have been adapted from *Swiss Family Robinson* by Michael West, whose simplifications probably are known to all teachers of adults. The writing of these paragraphs was motivated by an examination of the findings of this study presented in earlier chapters. After such an examination, West generously volunteered to prove that something more than a limited vocabulary is necessary to produce very simple writing, and hence very easy reading.

In each selection West has restricted the vocabulary to 133 different easy words. The total number of words in the three selections is approximately identical—293, 288, and 293 words, respectively. A comparison of the predicted indexes of difficulty shows that although all selections may be classified as “very easy,” Selection B is significantly more difficult than Selection A, and Selection C more difficult than Selection B. Had the vocabulary been held constant, yet been made to include harder words, the same variations in difficulty would have classified the selections into different areas of difficulty. While attention to vocabulary, then, may produce easy reading, greater ease is attained by taking other significant elements into account.

## I LOVE LOBSTER

### SELECTION A

(Predicted score 2.10)

The two tubs were in the water. The tubs were near our boat. I wanted to get them onto the land. I tried. I found that I could not do it. The bank was too steep. I could not get the tubs up the steep bank. So I set out to find a better place. Just as I set out I heard a cry. Jack was crying out for help.

both conversational and reading needs. Others are intended primarily to provide a basic reading vocabulary.

Which list or lists, then, is a writer or a publisher to use? And how shall he use them? The answer to the first question is determined by the audience he means to serve. Is it the foreign-born adult who cannot read in any language? Or is it the foreigner who can read in his native language and who is learning to read English? Or, again, is it the one who is learning to read and speak English simultaneously? Is it the native-born adult who is just learning to read? Or is it the reader who is improving his reading ability? Is it the Oriental student of English? For all these types of reading audience, the first few hundred words in the Thorndike list are useful, since they are common to all reading needs. For a specific reading audience, suitable words may be determined by reference to other lists. It is probable that any carefully prepared list represents a considerable advance over the judgment of an individual author or publisher regarding the importance of a word.

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## I LOVE LOBSTER

### SELECTION A

(Predicted score 2.10)

The two tubs were in the water. The tubs were near our boat. I wanted to get them onto the land. I tried. I found that I could not do it. The bank was too steep. I could not get the tubs up the steep bank. So I set out to find a better place. Just as I set out I heard a cry. Jack was crying out for help.

"Help!" "Help!" he cried. He might be in some danger! He was not far away from me. I took my axe. I ran towards him. Jack was standing in a deep pool. He was crying out in fear. When I came nearer I saw why he was crying out. A big lobster had caught hold of his leg. He was very frightened at it. He kicked. The lobster held on. He kicked. The lobster still held. I went into the water. I held the lobster by the back. I pulled. The lobster let go. We brought the lobster to land. Jack was soon quite happy again. He said, "Let us take the lobster to mother." He caught the lobster in his hands. But the lobster hit him. It hit him with its tail. He threw the lobster down on the ground because he was angry. He hit the lobster with a big stone. I became sad. I said, "You are acting like a foolish little child. This lobster has done harm to you. So it is your enemy. So you have hit it. You want to do harm to it. This is a show of anger. Do not be angry with your enemies. Do not do harm to those who do harm to you. You should do good to them. Love your enemies."

## SELECTION B

(Predicted score 1.93)

The two tubs were in the water near our boat. I wanted to get them onto the land. I tried to do this, but could not, for the bank was too steep. I could not get the tubs to land so I set out to find a better place that was not too steep. Just as I set out, I heard Jack cry out for help. He might be in some danger! I took my axe and ran towards him. He was not far away from me. I found him standing in a deep pool of water crying out in fear. When I came nearer to him I saw that a big lobster had caught hold of his leg. He was very frightened. He kicked and kicked but the lobster still held on. I went into the water, and took the lobster by its back, and pulled. It let go, and we brought it to land. Jack was soon quite happy again and wanted to take the lobster to his mother. "Let us take it to mother," he said. He caught it in his hands, and it hit him with its tail. He threw it down on the ground in anger and hit it with a big stone. I became sad at this show of anger. "You are acting like a foolish little child, Jack," said I. "You are angry with the lobster and have hit it, and want to do harm to it. Do not be angry with your enemies and try to harm them. Do good to those who do harm to you. You should love your enemies."

## SELECTION C

(Predicted score 1.69)

I wanted to get the two tubs that were in the water near our boat onto the land; but when I tried to do this I found that the bank was too steep so that I could not get the tubs to land, but had to set out to find a better place. Just as I set out to find it I heard a cry for help from Jack who was not far away, and, taking my axe, ran towards him fearing he might be in some danger. As I went I saw that he was standing in a deep pool, and, as I came nearer, I saw why he was crying out to me in fear. A big lobster had caught hold of his leg. Being very frightened he kicked, but kick as he might the lobster still held on.

Running into the water, and taking the lobster by its back, I pulled it away. When it let go we brought it to land. As soon as Jack became quite happy again, he said that he wanted to take the lobster to show to his mother, but, when he caught it in his hands, he was hit by the angry lobster's tail, and became so angry that he threw the lobster down on the ground and hit it with a big stone. Being sad at this show of anger, "Jack," said I, "you are acting like a foolish little child. Being angry with the lobster because it has done harm to you, you hit it so as to do harm to it. I have said to you, have I not, that we should do good to those who do harm to us and should not harm them? We should love our enemies."

#### ELEMENTS OF DIFFICULTY AND THEIR CONTRIBUTION TO READABLE WRITING

If, as Cheney has said, difficult books, after school as well as in school, are a prime unmaker of readers largely because "good" books are too complex for the reading level of the largest audience, then it seems reasonable to assume that readers would not be "unmade" could they find good material written in a manner they could understand. And we may further assume that such material will be written when we have scientific information regarding what qualities make a book easy or difficult. Information of this sort is being rapidly extended to include other elements of expression than vocabulary.

In Russia psychologists have been working on the problem of discovering a medium of communication that will reach the uneducated peasantry. For example, they have found that as a means of mass influence the "humoristic" safety poster that is characteristic of America is better understood and has greater influence than the "bloody" type predominating in Russia.<sup>20</sup> Consequently, the posters now being produced are adopting the former aspect. Psychologists have taken stenograms in meetings of peasants, workers, and soldiers and compared them with stenograms of speeches of educated persons. They find that vocabulary and grammatical structure of the sentences differ according to the training of the speaker. The more educated he is, the greater the percentage of nouns in his speech and the smaller the frequency of verbs. Uneducated persons use sen-

<sup>20</sup> *Ninth International Congress of Psychology Proceedings and Papers* (Princeton, New Jersey: Psychological Review Co., 1929), pp. 404-6.



tences that are longer but poorer in thought quality. These findings have led to experimentation in increasing the intelligibility of the juridic laws for peasants. From 40 to 90 per cent increase has been secured merely by substituting verbs for many nouns and by expressing the laws in sentences which contain relatively few new ideas.

Reference has been made in an earlier chapter to the study of Dale and Tyler concerning the elements of difficulty in technical reading matter. They have limited their study to one topic, personal health, which is known to hold high interest for adults. Their findings show that three elements are the best indicators of the difficulty which adults of limited reading ability will meet in reading material of this nature. These elements are: number of different technical words, number of different hard, non-technical words, and number of indeterminate clauses. By reducing the occurrence of these elements in a given selection an author will make the material more comprehensible for readers of lesser ability.

In the present study we have assumed that to make a book easy to read from the point of view of structural elements is a long step in the direction of making it readable. We have accordingly identified elements that are related to difficulty for the general adult reader and for the reader of lesser ability. The exact relationship of these elements to difficulty has been presented in chapter iv.

For the latter group, the reader of lesser ability, the following elements in reading material indicate difficulty.

1. Number of words not known to 90 per cent of sixth-grade pupils
2. Number of different hard words
3. Average sentence-length in syllables
4. Average sentence-length in words
5. Percentage of different words
6. Percentage of polysyllables
7. Percentage of different words not known to 90 per cent of sixth-grade pupils
8. Maximum syllabic sentence-length
9. Minimum syllabic sentence-length
10. Number of figures of speech

11. Number of prepositional phrases
12. Number of different words
13. Number of *i* words
14. Range of syllabic sentence-length
15. Number of infinitive and prepositional phrases
16. Percentage of content words
17. Number of asides
18. Percentage of bisyllables
19. Number of clauses introduced by subordinate conjunctions
20. Number of *e* words
21. Percentage of complex sentences
22. Number of *b* words
23. Number of clauses introduced by conjunctive adverbs
24. Percentage of compound and compound-complex sentences

The order of arrangement of the foregoing elements indicates their worth as indexes of difficulty. That is to say, the number of words in a book not known to 90 per cent of sixth-grade pupils is a better index of its difficulty than the percentage of compound and compound-complex sentences which it contains. The first fifteen elements are the only indicators of difficulty that are significant from a statistical point of view. We are hardly justified, however, in ignoring the other elements. The very fact that they are related to difficulty at all is evidence that complex sentences, asides, and bisyllables, for example, are indexes of difficulty of material containing them.

If it is advantageous to know the elements which indicate difficulty, it is equally advantageous to know the ones indicative of ease. Such elements are:

1. Percentage of easy words
2. Number of easy words
3. Percentage of monosyllables
4. Number of personal pronouns
5. Number of explicit sentences
6. Number of sentences per paragraph
7. Number of third-person pronouns
8. Number of infinitive phrases
9. Number of simple sentences
10. Number of complex sentences
11. Number of clauses introduced by relative pronouns
12. Percentage of structural words
13. Number of *h* words
14. Number of compound-complex sentences

15. Number of *w* words
16. Number of first-person pronouns
17. Percentage of simple sentences
18. Number of compound and compound-complex sentences
19. Total number of words per paragraph
20. Percentage of compound-complex sentences

What do these lists of elements mean to the writer or the publisher? In a general way we may say that an increase in the occurrence of elements in the first list increases the difficulty of a selection, whereas an increase of elements in the second list decreases the difficulty. In other words, if we look for indexes of ease in the adapted *Robinson Crusoe*, we find that its sentences are shorter, simpler, and more explicit; and its words shorter, easier, more familiar, and less diversified than in the original text.

The author, therefore, who wants to reach the widest possible audience will write simply. He will plan how he can express his ideas so as to reduce complexity. But will such planning tend to make a book of poorer quality? Will it reduce the freshness and spontaneity of the author's style? Will it kill the art of writing? If it does, we may ask further, need it do so? Does not the author plan his plot? Do not the actions, words, even the thoughts of his characters follow a pattern? Is not the organization of a book so planned that chapter divisions mark shifts of time and place? Even the most carefully planned book may be the most artistic and the most spontaneous.

To suggest, then, that writers plan to utilize words and phrases that will be understood by the greatest possible audience is merely to add one more aspect to the planning which they do anyway. The hope of the author who writes for a restricted audience lies in knowing the standards of that audience in terms of needs and interests. Such standards have not yet been developed and perhaps never can be for all aspects of readability.

For those aspects that are objectively measurable, however, there seems reason to believe that fairly reliable standards can be developed. A beginning has been made in this direction for

structural elements related to difficulty, as shown in Table LXV. The tentative standards presented in this table are given in terms of the range of occurrence, the median occurrence, and variation in occurrence of five elements in 350 books classified at Areas A, B, C, D, and E. They were derived by distributing the average occurrence of each element in all books classified at each of the various levels. Data in the table are read as follows: the average number of different hard words per 100 ranges from 21.4 to 6.0 for "very easy" books; from 25.5 to 12.0 for "easy" books; from 33.2 to 12.0 for "average" books; from 36.2 to 20.6 for "difficult" books; and from 37.0 to 19.3 for "very difficult" books. The median percentage of different hard words characterizing the five areas of difficulty is 12.3, 20.3, 24.3, 28.6, and 31.1. Three-fourths of all material at Areas A, B, C, D, and E contain a percentage of different hard words below 16.6, 21.9, 26.5, 30.9, and 33.7, respectively, while one-fourth contains a percentage below 8.7, 16.9, 22.1, 26.5, and 28.2. Variations in the occurrence of other elements are read similarly.

Although variations in the occurrence of different elements are not always sharply defined, they do indicate definite trends, which are shown graphically by Figures 27-31. The median for each element shows a relatively consistent gradation from one area to the next. There is an increase in number of different hard words, in length of sentence, in number of different words, and in number of prepositional phrases; and a decrease in number of personal pronouns. The upper quartile of one area closely approximates the lower quartile of the next higher area, indicating that materials at one extreme of a particular area are not significantly different in structural difficulty from materials at the opposite extreme of another area. Such a circumstance is in accord with gradations in reading ability as shown by standard tests. An examination of reading norms for succeeding grades shows that although those for fifth and sixth grades, let us say, are markedly different, the norm for high fifth and low sixth grades differ almost imperceptibly.

TABLE LXV

TENTATIVE STANDARDS FOR USE IN WRITING FOR ADULTS  
OF LIMITED READING ABILITY

	AREAS OF DIFFICULTY				
	Very Easy 1.15 to 2.06 (10 cases)	Easy .84 to 1.15 (70 cases)	Average .53 to .84 (188 cases)	Difficult .22 to .53 (69 cases)	Very Difficult — .26 to .22 (13 cases)
Number of different hard words in a hundred-word paragraph					
Range.....	21.4-6.0	25.5-12.0	33.2-12	36.2-20.6	37.0-19.3
Upper quartile.....	16.6	21.9	26.5	30.9	33.7
Median.....	12.3	20.3	24.3	28.6	31.1
Lower quartile.....	8.7	16.9	22.1	26.5	28.2
Number of first-, second-, and third-person pronouns in a hundred-word paragraph					
Range.....	16.8-1.9	15.3-1.2	15.5-2.0	11.0-3.9	12.3-2.6
Upper quartile.....	13.5	11.6	10.4	8.9	8.5
Median.....	11.5	8.6	8.2	7.0	5.0
Lower quartile.....	9.2	4.1	5.8	5.3	3.8
Average sentence-length in words in a hundred-word par- agraph					
Range.....	24.2-9.3	27.1-13.3	38.5-13.0	44.4-20.1	74.5-34.1
Upper quartile.....	20.8	21.1	25.8	31.8	42.8
Median.....	14.8	19.1	22.8	28.5	40.0
Lower quartile.....	12.0	17.7	20.4	25.8	35.5
Percentage of different words in a hundred-word paragraph					
Range.....	64.6-36.5	71.1-53.8	74.7-58.9	75.7-65.0	73.9-67.0
Upper quartile.....	59.7	67.7	70.2	72.9	72.3
Median.....	54.6	65.7	68.9	70.8	71.7
Lower quartile.....	51.6	61.5	67.5	69.4	68.1
Number of prepositional phrases in a hundred-word paragraph					
Range.....	14.3-5.8	14.6-8.6	15.2-8.4	15.8-10.1	15.8-11.1
Upper quartile.....	10.7	12.1	12.4	13.5	15.5
Median.....	8.4	10.8	11.8	12.7	13.7
Lower quartile.....	6.7	9.6	10.9	12.5	13.0

What does Table LXV mean for the writer of adult material? In the first place, it gives him a measuring device by means of

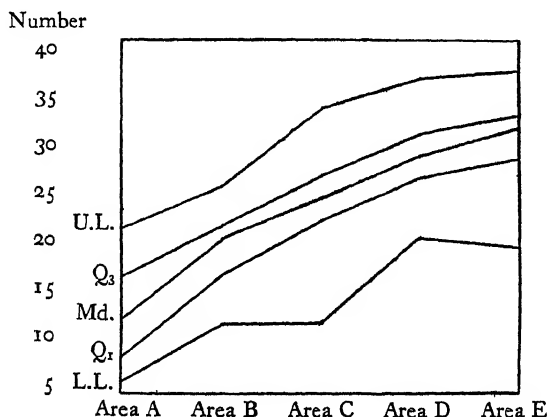


FIG. 27.—Occurrence of different hard words in reading materials at successive areas of difficulty.

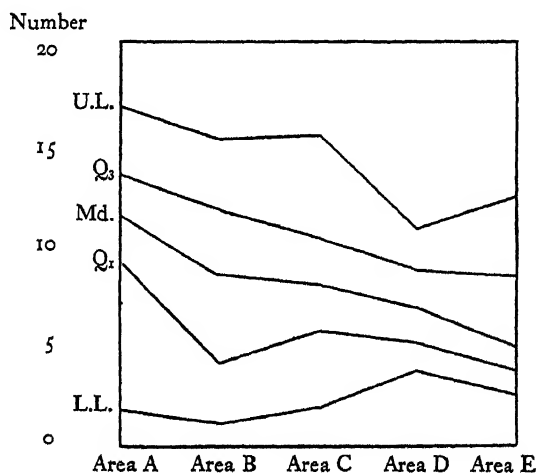


FIG. 28.—Occurrence of personal pronouns in reading materials at successive areas of difficulty.

which he can estimate the difficulty of his writing from the point of view of structure without use of the regression equation.

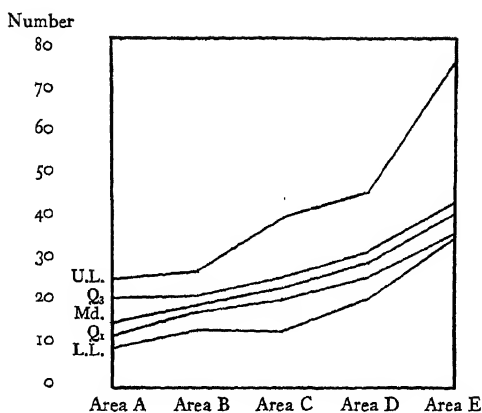


FIG. 29.—Average sentence-length in reading materials at successive areas of difficulty.

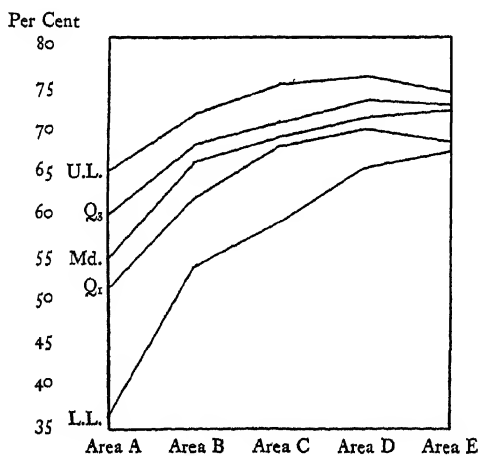


FIG. 30.—Occurrence of different words in reading materials at successive areas of difficulty.

For example, if in several hundred-word samplings of his material he finds that the occurrence of various structural elements approximates their occurrence at Area C, then he has sufficient evidence for assuming that his writing presents no more than average difficulty, that it ranks with other average books shown in Figure 23.

In the second place, Table LXV offers tentative standards which a writer can use as guides in reaching a particular audi-

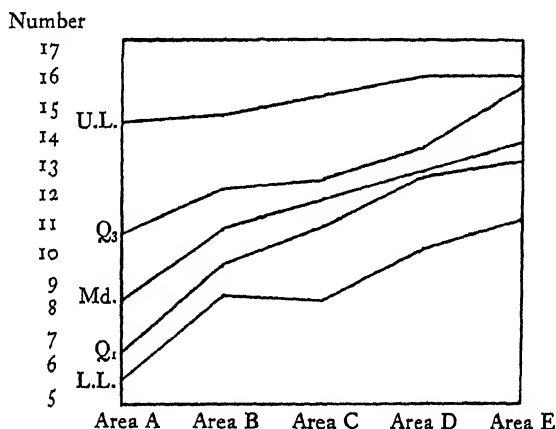


FIG. 31.—Occurrence of prepositional phrases in reading materials at successive areas of difficulty.

ence. Let us suppose that he wishes to prepare material for adults who are just beginning to read—that is, material which will rank at Area A. According to the standards in the table, he should use on the average not more than about 8–16 different hard words per hundred, 51–60 different words, and 6–10 prepositional phrases. He should make a presentation so direct that the number of personal pronouns will not be fewer than 9–13 per hundred words. Furthermore, his average length of sentence should not exceed 12–20 words.

How shall a writer set about to meet these standards? He may begin by reading materials classified at Area A. They will include children's textbooks for grades 2 and 3, the simplest of simplified classics shown in Figure 23, cheap wood-pulp maga-



zines—materials that will give him a concrete notion of the degree of simplicity represented at Area A. When he has caught the “feel” of very easy reading, he can then begin to write, pausing occasionally to check his work against desired standards and to make certain that he is imposing no structural difficulties on the beginning reader.

Obviously, this is not the whole task of writing readably even for the one class of reader that we have been considering, namely, the reader of limited ability. There still remain many other qualities whose relationship to readability needs to be determined for this type of reader. These have been suggested from time to time throughout the present report. For other classes of readers to write simply may mean making a book unreadable. Perhaps it is not simple writing and hence ease in reading that makes a book readable for them, but a combination of other qualities. What those qualities are needs to be discovered also. Again, it must be said that each quality should be isolated in turn, studied as objectively as possible, and the findings be organized in a way that will aid writers and publishers in providing readable materials for all classes of readers.

## APPENDIX A

The following list was used to discover the trend of opinion among librarians and others concerning What Makes a Book Readable. A discussion of the findings obtained by the use of this list appears in chapter ii.

### AN INVESTIGATION TO DETERMINE FACTORS OF READABILITY IN BOOKS

#### EXPLANATION OF LIST

The attached list includes possible factors of readability in books. It has been compiled from letters received from librarians, readers' advisers, publishers, and other persons interested in adult education in response to an inquiry concerning the factors which in their judgment contribute to the readability of books. The list is organized into four major categories: (I) Format or Mechanical Features; (II) General Features of Organization; (III) Style of Expression and Presentation; and (IV) Content. Each major category is divided into sub-items, designated by Arabic numerals; and each sub-item is explained or qualified by a number of factors, suggested by the correspondents as being possible factors affecting readability. These are designated *a*, *b*, *c*, etc.

#### USE OF LIST

The list is sent to you for use in helping to evaluate the relative influence of each category and each sub-item on readability; and in determining what factors are important under each sub-item. This step is preliminary to a more objective study of their significance.

#### METHOD OF SCORING AND CHECKING

Three columns are set up at the right of each page, designated A, B, C. Column A is to be used for checking specific factors; Column B, for evaluating sub-items; and Column C, for evaluating the four major categories.

*First step.*—Examine the complete list of factors and note the sub-items and categories into which they have been classified, in order to familiarize yourself with the general set-up of the list. You will note that there is direct contradiction among some factors, apparent overlapping of others, and close similarity among others. This has resulted from including all factors of possible readability, suggested by the correspondents.

*Second step.*—Look over the factors, designated *a*, *b*, *c*, etc., and decide which ones, in your judgment, make for readability. Indicate your decision by checking such factors (✓) in Column A. If you wish to show that certain factors are of special significance, indicate by (✓✓). Leave blank spaces after factors that you believe are insignificant or do not make for readability. Space

has been left for additional factors. Please include any that you think have been omitted.

*Third step.*—Consider the total value of the sub-items, 1, 2, 3, etc., in each major category as equal to 100 points. Look over the sub-items in Category I, and evaluate their relative importance in promoting readability. Distribute the total value, 100 points, among these sub-items to indicate their proportionate values. Write the values in Column B, opposite each sub-item. Be sure that the sum of all values assigned to sub-items 1, 2, 3, etc., equals 100 points, which is the total value of Category I.

Next, do the same thing for Category II; then for Category III, and finally for Category IV. In each case, distribute 100 points among their respective sub-items, writing in Column B. Each category should total 100 points.

*Fourth step.*—Now consider the total value of all four Categories, I, II, III, IV as equal to 100 points. Decide what proportion of 100 points best represents the value of each category in influencing readability. Distribute the 100 points among the four categories, as your judgment dictates. Write the assigned value in Column C after each category. The sum of the four values should total 100 points.

## A LIST OF POSSIBLE FACTORS OF READABILITY IN BOOKS

	A	B	C
<b>I. FORMAT or MECHANICAL FEATURES</b>			
<b>1. Size of Book</b>			
a. Small			
b. Average			
c. Larger than a textbook			
d. About 5" by 8"			
e. About 14 cm. by 16 cm.			
f. Light weight			
g. Comfortable			
h. Not forbidding			
<b>2. Number of Pages</b>			
a. Brief			
b. About 50 pages			
c. About 75 pages			
<b>3. Quality of Paper</b>			
a. Opaque			
b. Dull surfaced			
c. Even colored			
d. White			
e. Not white			
f. Pleasant to touch			
g. Good			
<b>4. Kind of Type and Printing</b>			
a. Large			
b. Good-sized			
c. Medium			
d. Small			
e. About 11 pt.			
f. About 12-14 pt.			
g. Not under 8 pt.			
h. No. 7, Old Style			
i. 4 pts. leading			
j. Spacing, like double typing space			
k. Well spaced			
l. Open face			
m. Black ink			
n. Dull ink			
o. Clear, legible			
p. Attractive			
q. Good			

	A	B	C
<b>5. Length of Line</b>			
a. About 2 2/3"-2 5/6"			
b. Not over 5 1/2"			
c. 20 pica			
<b>6. Margins</b>			
a. Wide, liberal			
b. Rather wide			
c. Medium			
d. Adequate			
e. Good			
<b>7. General Appearance of Page</b>			
a. Not like textbook			
b. Broken, not compact			
c. Attractive			
<b>8. Binding</b>			
a. Sturdy, durable			
b. Attractive			
<b>9. Illustrations</b>			
a. Some			
b. Numerous			
c. For biography and science			
d. Adjacent to text			
e. On same paper as text			
f. Colored			
g. Captioned			
h. Of cartoon type			
i. Not childish			
j. Appropriate			
k. Attractive			
l. With maps and diagrams			
<b>II. GENERAL FEATURES OF ORGANIZATION</b>			
<b>1. Title of Book</b>			
a. Striking			
<b>2. Chapter Divisions</b>			
a. Descriptive chapter headings			
b. Running chapter headings			

	A	B	C
3. Paragraph Divisions			
a. Sub-heads			
b. No sub-heads			
c. Sub-heads in bold-faced type			
d. Interesting sub-heads			
e. Not numbered			
f. Not like textbook			
4. Reference Guides			
a. Table of contents			
b. Index with catchy title			
c. No index			
d. Glossary (not mentioned in text)			
e. No marginal notes			
f. No footnotes			
g. References following text			
h. All references in text proper			
i. Appendix for references			
j. Appendix for charts and tables			

### III. STYLE OF EXPRESSION AND PRESENTATION

1. Vocabulary		
a. Limited		
b. Limited to 1000-1500 words		
c. Easy		
d. Not necessarily easy		
e. Easy enough for 12-14 year old child		
f. Not consciously adapted		
g. Simple words		
h. Short words		
i. Popular		
j. Common, familiar		
k. Non-technical		
l. Vivid		
m. Anglo-Saxon		
n. Vernacular, (even colloquial)		
o. Dynamic		
p. Fresh		
q. Specific		
r. Non-classical		
s. Informal, (non-academic)		
t. Adult (not childish)		
2. Sentences		
a. Short		
b. Varied in length		
c. Reasonably short		
d. Concise		
e. Simple		
f. Not too involved		

	A	B	C
g. Without guarded clauses			
h. Concrete			
i. Rhythmical			
j. Restated in varied ways			
3. Paragraphs			
a. Short			
b. Varied in length			
c. Reasonable in length			
d. Maximum length of 1/2 page			
e. Simple			
f. Succinct			
g. Inviting, arresting			
h. Of a single thought-unit			
i. Progressively continuous			
4. Chapters			
a. Short			
b. Clear-cut			
c. Stimulating at beginning			
d. Promising at the end			
5. Attitude of Author			
a. Enthusiastic			
b. Inspirational			
c. Moralizing			
d. Optimistic			
e. Humanitarian			
f. Emotional, sentimental			
6. Method of Presentation			
a. Narrative			
b. Biographical			
c. Descriptive, (live, colorful)			
d. Not descriptive			
e. Poetic			
f. Dramatic			
g. Journalistic			
7. Style of Presentation			
a. Direct			
b. Vivid, colorful			
c. Graphic			
d. Lucid, clear			
e. Charming			
f. Picturesque			
g. Entertaining			
h. Concrete			
i. Apt			

	A	B	C
j. Simple			
k. Easy, fluent			
l. Popular			
m. Stimulating			
n. Original			
o. Distinguished			
p. Informal			
q. Light, humorous			
r. Convincing			

## 8. Stylistic Devices

- |                                           |  |
|-------------------------------------------|--|
| a. Brevity                                |  |
| b. Omission of non-essentials             |  |
| c. Simple plot                            |  |
| d. Exaggeration                           |  |
| e. Conversation                           |  |
| f. Questions and answers                  |  |
| g. Judicious use of questions and answers |  |
| h. No questions and answers               |  |
| i. Familiar verbal illustration           |  |
| j. Some repetition                        |  |
| k. Contrast and comparison                |  |
| l. Parables                               |  |
| m. Omission of allegory                   |  |
| n. Omission of allusions                  |  |
| o. Omission of symbolism                  |  |
| p. Omission of abstractions               |  |
| q. Accuracy in portrayal                  |  |
| r. No over-specialization                 |  |
| s. Appeal within reader's scale           |  |
| t. Arousal of feeling reaction            |  |
| u. Adult approach                         |  |
| v. Introduction of new elements singly    |  |
| w. Start with familiar                    |  |
| x. Portrayal of own personality           |  |
| y. Realism                                |  |
| z. Phantasy                               |  |
|                                           |  |
|                                           |  |

## IV. CONTENT

## 1. Theme

- |                                   |  |
|-----------------------------------|--|
| a. What people want to read about |  |
| b. History - (especially of U.S.) |  |
| c. History (not important)        |  |
| d. Adventure                      |  |
| e. Science and invention          |  |
| f. Information                    |  |
| g. People - Personalities         |  |
| h. Successful people              |  |
| i. Ideas of people                |  |
| j. Not just ideas                 |  |
| k. Not theories                   |  |
| l. Romance and action             |  |



	A	B	C
m. Travel and business			
n. Human interest			
o. Real or ideal life experience			
p. Interpretation of life experience			
q. Not analysis of life experience			
r. Extension of human experience			
s. Opposed to reality			
<b>2. Nature of Subject Matter</b>			
a. Timely			
b. Unusual			
c. Familiar			
d. Amusing			
e. Homely			
f. Rich, live			
g. Popular			
h. Humanized			
i. Easy			
j. Interesting			
k. Moral			
l. Helpful			
m. Purposeful			
<b>3. Unity of Content</b>			
a. Single phase			
b. Not demanding general knowledge			

## APPENDIX B

Tables LXVI-LXXVII, inclusive, list factors of content, style, format, and organization ranked of greatest and least importance to readability by each of three groups of judges. From these tables were obtained the common opinions relative to readability appearing in chapter ii.

TABLE LXVI  
FACTORS RELATED TO CONTENT RANKED OF GREATEST AND LEAST  
IMPORTANCE TO READABILITY BY LIBRARIANS

Factors Ranked in Highest Quarter of 47 Factors	Factors Ranked in Lowest Quarter of 47 Factors
<p>2a Timely subject matter</p> <p>*1g Theme—people and personalities</p> <p>1m Theme—travel and business</p> <p>1e Theme—science and invention</p> <p>1l Theme—romance and action</p> <p>*1n Theme of human interest</p> <p>2f Interesting subject matter</p> <p>*1d Theme—adventure</p> <p>3b Content not demanding a general knowledge</p> <p>1f Theme—information</p> <p>1p Theme—interpretation of life experience</p> <p>1b Theme—history (especially of U.S.)</p>	<p>1i Theme—ideas of people</p> <p>2e Homely subject matter</p> <p>3a Content—a single phase</p> <p>2i Easy subject matter</p> <p>2k Moral subject matter</p> <p>1c Theme—history not important</p> <p>1j Theme—not just ideas</p> <p>1k Theme—not theories</p> <p>1s Theme—opposed to reality</p> <p>1t Theme—economics</p> <p>1q Theme—not analysis of life experience</p> <p>3e Content that adheres to the stated subject</p>

\* Considered of special significance as indicated on the check-list by (✓✓).

TABLE LXVII

FACTORS RELATED TO CONTENT RANKED OF GREATEST AND LEAST  
IMPORTANCE TO READABILITY BY PUBLISHERS

Factors Ranked in Highest Quarter of 47 Factors	Factors Ranked in Lowest Quarter of 47 Factors
1 <i>d</i> Theme—adventure	1 <i>i</i> Theme—ideas of people
1 <i>e</i> Theme—science and invention	2 <i>k</i> Theme—not theories
1 <i>n</i> Theme—of human interest	1 <i>t</i> Theme—self-improvement
1 <i>a</i> Theme—what people want to read about	2 <i>e</i> Homely subject matter
1 <i>g</i> Theme—people and personalities	2 <i>g</i> Popular subject matter
1 <i>l</i> Theme—romance and action	2 <i>k</i> Moral subject matter
2 <i>a</i> Timely subject matter	3 <i>c</i> Content with clear, prevailing purpose
2 <i>h</i> Humanized subject matter	3 <i>d</i> Content in careful sequence
2 <i>j</i> Interesting subject matter	1 <i>c</i> Theme—history not important
2 <i>l</i> Helpful subject matter	1 <i>j</i> Theme—not just ideas
1 <i>f</i> Theme—information	1 <i>q</i> Theme—not analysis of human experi- ence
1 <i>m</i> Theme—travel and business	1 <i>s</i> Theme—opposed to reality

TABLE LXVIII

FACTORS RELATED TO CONTENT RANKED OF GREATEST AND LEAST IMPORTANCE  
TO READABILITY BY OTHERS INTERESTED IN ADULT EDUCATION

Factors Ranked in Highest Quarter of 47 Factors	Factors Ranked in Lowest Quarter of 47 Factors
*2 <i>a</i> Timely subject matter	1 <i>j</i> Theme—not just ideas
1 <i>m</i> Theme—travel and business	1 <i>k</i> Theme—not theories
1 <i>n</i> Theme—of human interest	1 <i>s</i> Theme—opposed to reality
*2 <i>h</i> Humanized subject matter	1 <i>q</i> Theme—not analysis of human ex- perience
2 <i>j</i> Interesting subject matter	1 <i>c</i> Theme—history not important
3 <i>b</i> Content not demanding general knowledge	1 <i>y</i> Theme—imaginative fiction
*1 <i>g</i> Theme—people and personalities	1 <i>x</i> Theme—religion and reform
1 <i>l</i> Theme—romance and action	1 <i>v</i> Theme—health
1 <i>a</i> Theme—what people want to read about	1 <i>w</i> Theme—vocational guidance
*1 <i>d</i> Theme—adventure	1 <i>z</i> Theme—understanding the times
1 <i>h</i> Theme—successful people	1 <i>u</i> Theme—understanding one's self
*2 <i>d</i> Purposeful subject matter	3 <i>f</i> Content leading to understanding of relationships of parts of general sub- jects

\* Considered of special significance as indicated on the check-list by (✓✓).

TABLE LXIX

FACTORS RELATED TO STYLE OF EXPRESSION AND PRESENTATION RANKED OF  
GREATEST AND LEAST IMPORTANCE TO READABILITY BY LIBRARIANS

Factors Ranked in Highest Quarter of 116 Factors	Factors Ranked in Lowest Quarter of 116 Factors
1 <i>t</i> Adult vocabulary	1 <i>a</i> Limited vocabulary
8 <i>k</i> Use of contrast and comparison	1 <i>h</i> Short words
*7 <i>d</i> Lucid, clear presentation	1 <i>r</i> Non-classical vocabulary
7 <i>r</i> Convincing style	7 <i>o</i> Distinguished style
*2 <i>f</i> Sentences not too involved	5 <i>f</i> Emotional, sentimental attitude of author
8 <i>w</i> Start with familiar	8 <i>c</i> Simple plot
8 <i>s</i> Appeal within reader's scale	1 <i>m</i> Anglo-Saxon
3 <i>c</i> Paragraphs of reasonable length	1 <i>n</i> Vernacular (even colloquial) vocabu- lary
*5 <i>a</i> Enthusiastic attitude of author	6 <i>e</i> Poetic style
8 <i>u</i> Adult approach	7 <i>q</i> Light, humorous style
*1 <i>k</i> Non-technical vocabulary	8 <i>y</i> Realism
*4 <i>e</i> Chapters stimulating at beginning	3 <i>e</i> Simple paragraphs
2 <i>b</i> Sentences varied in length	5 <i>g</i> Truthful, sincere attitude of author
7 <i>a</i> Direct presentation	7 <i>e</i> Charming style
8 <i>q</i> Accuracy in portrayal	7 <i>f</i> Picturesque style
1 <i>l</i> Vivid vocabulary	8 <i>l</i> Parables
1 <i>s</i> Informal vocabulary	3 <i>f</i> Succinct paragraphs
3 <i>h</i> Paragraphs of a single thought-unit	3 <i>a</i> Short paragraphs
4 <i>d</i> Chapters promising at end	1 <i>b</i> Vocabulary limited to 1000-1,500 words
6 <i>a</i> Narrative style	1 <i>e</i> Vocabulary easy enough for twelve- fourteen-year-old child
6 <i>c</i> Descriptive style	4 <i>e</i> Chapters of about 30 pages
7 <i>g</i> Entertaining style	5 <i>c</i> Moralizing attitude of author
1 <i>j</i> Common, familiar vocabulary	7 <i>s</i> Appropriate style of expression
1 <i>g</i> Specific vocabulary	6 <i>h</i> Appropriate presentation
7 <i>m</i> Stimulating style	5 <i>l</i> Knowledge of subject
8 <i>e</i> Conversation	5 <i>h</i> Well-balanced attitude of author
2 <i>c</i> Reasonably short sentences	8 <i>d</i> Exaggeration
3 <i>b</i> Paragraphs varied in length	8 <i>f</i> Questions and answers
4 <i>b</i> Clear-cut chapters	8 <i>z</i> Phantasy

\* Considered of special significance as indicated on the check-list by (✓✓).

TABLE LXX

FACTORS RELATED TO STYLE OF EXPRESSION AND PRESENTATION RANKED OF  
GREATEST AND LEAST IMPORTANCE TO READABILITY BY PUBLISHERS

Factors Ranked in Highest Quarter of 116 Factors	Factors Ranked in Lowest Quarter of 116 Factors
3 <i>h</i> Paragraphs of a single thought-unit	1 <i>d</i> Vocabulary not necessarily easy
1 <i>s</i> Informal vocabulary	1 <i>e</i> Vocabulary easy enough for twelve- fourteen-year-old child
1 <i>t</i> Adult vocabulary	1 <i>m</i> Anglo-Saxon
7 <i>a</i> Direct presentation	1 <i>b</i> Vocabulary limited to 1,000-1,500 words
8 <i>q</i> Accuracy in portrayal	1 <i>h</i> Short words
1 <i>k</i> Non-technical vocabulary	2 <i>a</i> Short sentences
1 <i>l</i> Vivid vocabulary	5 <i>c</i> Moralizing attitude of author
2 <i>b</i> Sentences varied in length	5 <i>f</i> Emotional, sentimental attitude of au- thor
2 <i>f</i> Sentences not too involved	6 <i>d</i> Not descriptive style
4 <i>c</i> Chapter stimulating at the beginning	6 <i>e</i> Poetic style
5 <i>a</i> Enthusiastic attitude of author	7 <i>e</i> Charming style
8 <i>b</i> Omission of non-essentials	7 <i>f</i> Picturesque style
8 <i>e</i> Conversation	7 <i>i</i> Apt style
8 <i>u</i> Adult approach	7 <i>l</i> Popular style
8 <i>w</i> Start with familiar	7 <i>o</i> Distinguished style
2 <i>c</i> Reasonably short sentences	8 <i>d</i> Exaggeration
2 <i>d</i> Concise sentences	8 <i>l</i> Parables
3 <i>c</i> Paragraphs of reasonable length	8 <i>r</i> No overspecialization
4 <i>b</i> Clear-cut chapters	8 <i>x</i> Portrayal of author's personality
4 <i>d</i> Chapters promising at end	8 <i>z</i> Phantasy
6 <i>a</i> Narrative style	1 <i>n</i> Vernacular (even colloquial) vocabu- lary
7 <i>d</i> Lucid, clear presentation	1 <i>r</i> Non-classical vocabulary
8 <i>s</i> Appeal within reader's scale	1 <i>u</i> Non-technical words explained
1 <i>f</i> Vocabulary not consciously adapted	2 <i>g</i> Sentences without guarded clauses
2 <i>h</i> Concrete sentences	2 <i>i</i> Rhythmical sentences
3 <i>b</i> Paragraphs varied in length	2 <i>l</i> Sentences of varied rhythms
4 <i>a</i> Short chapters	3 <i>e</i> Simple paragraphs
5 <i>e</i> Humanitarian attitude of author	5 <i>j</i> Objective attitude of author
6 <i>c</i> Descriptive style	7 <i>b</i> Popular style

TABLE LXXI

FACTORS RELATED TO STYLE OF EXPRESSION AND PRESENTATION RANKED OF  
GREATEST AND LEAST IMPORTANCE TO READABILITY BY OTHERS  
INTERESTED IN ADULT EDUCATION

Factors Ranked in Highest Quarter of 116 Factors	Factors Ranked in Lowest Quarter of 116 Factors
6a Narrative style	1c Vocabulary easy enough for twelve- fourteen-year-old child
7a Direct presentation	1h Short words
1k Non-technical vocabulary	1r Non-classical vocabulary
*4c Chapters stimulating at beginning	2a Short sentences
6c Descriptive style	1a Limited vocabulary
8k Contrast and comparison	1j Popular vocabulary
7r Convincing style	7i Apt style
8u Adult approach	8x Portrayal of author's personality
*7d Lucid, clear representation	1b Vocabulary limited to 1,000-1,500 words
8b Omission of non-essentials	1d Vocabulary not necessarily easy
1s Informal vocabulary	3d Paragraph length about one-half page
*1t Adult vocabulary	3f Succinct paragraphs
4a Short chapters	7f Picturesque style
4d Chapters promising at end	7l Popular style
*5a Enthusiastic attitude of author	8d Exaggeration
7c Graphic presentation	8l Parables
1f Vocabulary not consciously adapted	1n Vernacular (even colloquial) vocabu- lary
1j Common, familiar vocabulary	2i Rhythmical sentences
2b Sentences varied in length	6e Poetic style
*2f Sentences not too involved	8h No questions and answers
2h Concrete sentences	5c Moralizing attitude of author
7b Vivid style	7e Charming style
8w Start with familiar	7o Distinguished style
2e Simple sentences	5f Emotional, sentimental attitude of author
4b Clear-cut chapters	5i Straightforward attitude of author
8g Judicious use of questions	5k Author's knowledge of reader
3b Paragraphs varied in length	5l Author's knowledge of subject
3i Paragraphs progressively continuous	7f Natural style
5b Inspirational attitude of author	8z Phantasy

\* Considered of special significance as indicated on the check-list by (✓).

TABLE LXXII

FACTORS RELATED TO FORMAT RANKED OF GREATEST AND LEAST  
IMPORTANCE TO READABILITY BY LIBRARIANS

Factors Ranked in Highest Quarter of 90 Factors	Factors Ranked in Lowest Quarter of 90 Factors
<p>8<i>b</i> Attractive binding 9<i>j</i> Appropriate illustrations 4<i>k</i> Well-spaced type 9<i>l</i> Maps and diagrams *40 Clear, legible type 7<i>b</i> Broken page 7<i>c</i> Attractive page 1<i>b</i> Book of average size 1<i>f</i> Light-weight book 3<i>b</i> Dull-surfaced paper 4<i>m</i> Black ink 9<i>d</i> Illustrations adjacent to text 3<i>g</i> Good quality of paper 9<i>g</i> Captioned illustrations 9<i>k</i> Attractive illustrations 1<i>g</i> Book of comfortable size 4<i>p</i> Attractive type 8<i>a</i> Sturdy binding 3<i>e</i> Paper not white 3<i>c</i> Even-colored paper 6<i>d</i> Adequate margins 4<i>g</i> Good type 5<i>b</i> Length of line, not over 5½"</p>	<p>2<i>f</i> Book of about 150 pages 4<i>e</i> Type about 11 point 2<i>a</i> Brief book 4<i>f</i> Type about 12-14 point 4<i>j</i> Type spaced like double typing 5<i>c</i> Length of line, 20 picas 8<i>c</i> Flexible binding 9<i>e</i> Illustrations on same paper as text 9<i>h</i> Illustrations of cartoon type 1<i>c</i> Size of book larger than a textbook 4<i>n</i> Dull ink 9<i>n</i> Illustrations of artistic value 1<i>a</i> Small book 1<i>i</i> Book about 20 cm. by 14 cm. 2<i>h</i> Book of 300-400 pages 4<i>a</i> Large type 4<i>d</i> Small type 4<i>r</i> Granjon type 4<i>s</i> Roman, Old Style 5<i>a</i> Length of line about 2⅔"-2⅝" 6<i>f</i> Well-proportioned margins 9<i>m</i> Illustrations for travel books 6<i>a</i> Wide, liberal margins</p>

\* Considered of special significance as indicated on the check-list by (✓✓).

TABLE LXXXIII

FACTORS RELATED TO FORMAT RANKED OF GREATEST AND LEAST  
IMPORTANCE TO READABILITY BY PUBLISHERS

Factors Ranked in Highest Quarter of 90 Factors	Factors Ranked in Lowest Quarter of 90 Factors
7c Attractive page	1c Size of book larger than a textbook
1a Opaque paper	2d Book of about 64-96 pages
4m Black ink	4h Type No. 7 Old Style
8b Attractive binding	4n Dull ink
1b Book of average size	4y Caslon Old Style monotype
4o Clear, legible type	4w Type harmonious with book
1g Book of comfortable size	4x Type depending on line and page
4e Type about 11 point	5d Length of line about 3½"-4"
8a Sturdy binding	5f Line not over 24 picas
3b Dull-surfaced paper	5e Line about 22 picas
4k Well-spaced type	6f Well-proportioned margins
9j Appropriate illustrations	6g Margins giving balanced effect of facing pages
3c Even-colored paper	1h Glossy paper
4l Open-face type	1e Size of book about 14 cm. by 16 cm.
4p Attractive type	2b Book of about 50 pages
7b Broken page	2c Book of about 75 pages
1f Light-weight book	4a Large type
1h Book not forbidding in appearance	4d Small type
3d White paper	4j Spacing like double typing
5c Length of line, 20 picas	5a Length of line about 2½"-2¾"
6d Adequate margins	9c Illustrations in books on biography and science
9g Captioned illustrations	9f Colored illustrations
9l Maps and diagrams	9h Illustrations of cartoon type



TABLE LXXIV

FACTORS RELATED TO FORMAT RANKED OF GREATEST AND LEAST IMPORTANCE  
TO READABILITY BY OTHERS INTERESTED IN ADULT EDUCATION

Factors Ranked in Highest Quarter of 90 Factors	Factors Ranked in Lowest Quarter of 90 Factors
<p>8<i>b</i> Attractive binding 4<i>m</i> Black ink 7<i>c</i> Attractive page 1<i>b</i> Book of average size *4<i>k</i> Well-spaced type *4<i>o</i> Clear, legible type 9<i>d</i> Illustrations adjacent to text 8<i>a</i> Sturdy binding 1<i>f</i> Light-weight book 9<i>g</i> Captioned illustrations 9<i>j</i> Appropriate illustrations 9<i>k</i> Attractive illustrations 9<i>l</i> Maps and diagrams 1<i>d</i> Size of book about 5" by 8" 3<i>b</i> Dull-surfaced paper 4<i>p</i> Attractive type 5<i>b</i> Length of line not over 5½" *1<i>h</i> Size of book not forbidding 3<i>a</i> Opaque paper 3<i>d</i> White paper 3<i>g</i> Good paper 9<i>c</i> Illustrations in books on biography and science 9<i>i</i> Not childish illustrations</p>	<p>6<i>a</i> Wide, liberal margins 9<i>e</i> Illustrations on same paper as text 9<i>f</i> Colored illustrations 2<i>b</i> Book of about 50 pages 2<i>e</i> Book of about 300 pages 4<i>a</i> Large type 3<i>e</i> Not white paper 4<i>i</i> Type with 4-point leading 5<i>c</i> Length of line, 20 picas 8<i>e</i> Appropriate binding 3<i>h</i> Glossy paper 4<i>d</i> Small type 4<i>n</i> Dull ink 4<i>t</i> Type 9-12 point 4<i>u</i> Type with 2-point leading 5<i>d</i> Length of line about 3½"-4" 6<i>e</i> Good margins 8<i>f</i> Binding in warm, dark colors 1<i>c</i> Size of book larger than a textbook 1<i>e</i> Size of book about 14 cm. by 16 cm. 4<i>h</i> Type No. 7 Old Style 5<i>g</i> Length of line, reasonable 4<i>c</i> Medium-sized type</p>

\* Considered of special significance as indicated on the check-list by (✓ ✓).

TABLE LXXV

FACTORS RELATED TO GENERAL FEATURES OF ORGANIZATION RANKED OF  
GREATEST AND LEAST IMPORTANCE TO READABILITY BY LIBRARIANS

Factors Ranked in Highest Quarter of 37 Factors	Factors Ranked in Lowest Quarter of 37 Factors
2 <i>a</i> Descriptive chapter headings	4 <i>i</i> Appendix for references
4 <i>a</i> Table of contents	3 <i>c</i> Subheads in bold-faced type
1 <i>a</i> Striking title of book	1 <i>d</i> Dignified title
3 <i>f</i> Paragraph divisions not like a textbook	1 <i>e</i> Connotative title
4 <i>b</i> Index with catchy title	4 <i>h</i> All references in text proper
4 <i>e</i> No marginal notes	4 <i>l</i> Index
4 <i>g</i> References following text	3 <i>a</i> Subheads
3 <i>e</i> Paragraph divisions not numbered	4 <i>m</i> Footnotes
4 <i>f</i> No footnotes	4 <i>o</i> Summary of chapters in table of contents

TABLE LXXVI

FACTORS RELATED TO GENERAL FEATURES OF ORGANIZATION RANKED OF  
GREATEST AND LEAST IMPORTANCE TO READABILITY BY PUBLISHERS

Factors Ranked in Highest Quarter of 37 Factors	Factors Ranked in Lowest Quarter of 37 Factors
2 <i>a</i> Descriptive chapter headings	3 <i>c</i> Subheads in bold-faced type
4 <i>a</i> Table of contents	4 <i>c</i> No index
1 <i>a</i> Striking title of book	4 <i>m</i> Footnotes
4 <i>b</i> Index with catchy title	1 <i>f</i> Title of human interest
1 <i>c</i> Meaningful title of book	2 <i>c</i> Decorative chapter heads
2 <i>b</i> Running chapter headings	2 <i>e</i> Progressive chapter divisions
3 <i>f</i> Paragraph divisions not like a text- book	3 <i>b</i> No subheads
4 <i>h</i> All references in text proper	3 <i>g</i> Progressive paragraph divisions
4 <i>i</i> Appendix for all references	4 <i>l</i> Index

TABLE LXXVII

FACTORS RELATED TO GENERAL FEATURES OF ORGANIZATION RANKED OF  
GREATEST AND LEAST IMPORTANCE TO READABILITY BY OTHERS  
INTERESTED IN ADULT EDUCATION

Factors Ranked in Highest Quarter of 37 Factors	Factors Ranked in Lowest Quarter of 37 Factors
<p>4a Table of contents  1a Striking title of books  2a Descriptive chapter headings  3a Subheads  3f Paragraph divisions not like a text-  book  4h All references in text proper  3d Interesting subheads  3c Subheads in bold-faced type  4b Index with catchy title</p>	<p>1c Meaningful title of book  1f Title of human interest  2d Headings of chapters to arouse curiosity  2f Chapters with concrete introduction  2g Chapters with summary at end  3h Paragraph divisions numbered  4k Glossary, mentioned in text  4l Index  4n Few references</p>

## APPENDIX C

The construction of adult reading tests from representative materials of fiction and of general non-fiction is described in Appendix C.

That the tests constructed from the selected materials should represent as many potential elements of difficulty as possible seemed essential in order, first, that the criterion of difficulty obtained for each item might truly represent a combination of many influences; and, second, that the final identification of elements of difficulty might be as complete and reliable as the scope of the study would allow.

Six major steps of procedure were followed:

1. Determining a means of measuring comprehension for this investigation.
2. Selecting appropriate test items.
3. Preparing responses for the test items.
4. Evaluating the test responses.
5. Rating the difficulty of test responses.
6. Arranging the two tests in final form.
7. Determining the validity and reliability of the tests.

### DETERMINING A MEANS OF MEASURING COMPREHENSION

*What constitutes comprehension?*—The type of tests constructed for this study was determined in the light of the theory accepted regarding the nature of comprehension. That comprehension is not a single unitary process is generally conceded. It is, rather, a blending of many processes whose totality represents understanding. The resolution of comprehension into its component processes has not been satisfactorily accomplished. As a consequence, now one process and now another is taken as a measure of comprehension, as test-makers try to determine *what* to measure.

Not only is comprehension thought of as a combination of several processes, but it is conceived of possessing different levels of quality. From mere perception rises the beginning of understanding, manifested by thoughts, feelings, or impulses aroused by the reading material. From this realm of immediate action or naive emotional expression, a person arrives ultimately at a level of understanding which implies some degree of intellectual discrimination, which requires him to distinguish the thought invited by the words from other thoughts more or less like it.<sup>1</sup> It is this level that marks maturity of understanding.

<sup>1</sup> C. K. Ogden and I. A. Richards, *The Meaning of Meaning* (New York: Harcourt, Brace & Co., 1927), pp. 185-208.

I. A. Richards, *Practical Criticism* (New York: Harcourt, Brace & Co., 1929), pp. 179-88, 326-30.

A thorough measure of comprehension would involve the use of a series of tests for measuring as many aspects of comprehension as are known. It would involve, also, a measure of these aspects at various levels, in order that the degree of maturity represented by a reader's comprehension might be determined. Scientific techniques are as yet too undeveloped for such an ambitious undertaking. What the test-maker must do, therefore, is to decide upon the aspect of comprehension he will measure and the level at which he proposes to measure it. He then faces the baffling question of *how* to measure it. The issues discussed in the remaining paragraphs of this section indicate something of the complexity that attends the problem of measuring comprehension.

*What aspects of comprehension shall be measured?*—Two aspects of comprehension directed the construction of tests used in this study: (1) the ability to get the "sense" of what is read, in the form of a general impression of the total meaning; and (2) the ability to recall specific elements in a selection. These aspects were accepted as being of first importance, after an examination was made of the major outcomes resulting from reading general materials.

Since no scientifically determined list of outcomes has been derived, it was necessary to resort to empirical judgment and to infer probable outcomes from facts about the purposes for which people read,<sup>2</sup> from evidence as to the motives that stimulate reading,<sup>3</sup> and from typical situations known to promote various types of reading.<sup>4</sup> An attempt was made to select facts pertaining to the purposes, motives, and situations that lead to the general reading of books, magazines, and newspapers. Since the facts themselves are presumably not exhaustive, no claim can be made for the inferences drawn from them beyond the probability that they represent the major outcomes resulting from reading for a variety of purposes in a variety of general situations.

After the facts pertaining to purposes, motives, and situations had been gathered, the following question was propounded: What outcomes probably arise from reading "for fun," "for emotional satisfaction," "to acquire general information," "to gather specific information about a special

<sup>2</sup> Personal conferences with more than 900 adults revealed five major purposes in reading, as reported in: William S. Gray, "The Importance of Intelligent Silent Reading," *Elementary School Journal*, XXIV (January, 1924), 349-52.

From interviews with approximately 300 adults, Parsons obtained a list of frequently mentioned purposes in reading: Rhey B. Parsons, "A Study of Adult Reading." Unpublished Master's thesis, Dept. of Education, University of Chicago, 1923. Pp. 124.

Interviews with 100 adults and 410 answered questionnaires gave Montgomery data pertaining to the chief reasons for reading recreational material: Wilda Lee Montgomery, "The Investigation of the Uses of Recreatory Reading," *University of Pittsburgh School of Education Journal*, IV (March-April, 1929), 90-91.

<sup>3</sup> Interests and motives of approximately 1,200 young people and adults who consulted the reader's adviser in Milwaukee are listed in the following reference: W. S. Gray and Ruth Monroe, *The Reading Interests and Habits of Adults* (New York: Macmillan Co., 1929), pp. 268-69.

<sup>4</sup> Situations prompting informational and recreational reading appear in: *The Twenty-fourth Yearbook of the National Society for the Study of Education*, Part I, pp. 5-8. Bloomington, Illinois: Public School Publishing Co., 1925.

topic," "to extend experience," "to improve one's literary appreciation," "to satisfy one's curiosity," or "to forget"?

Four major outcomes were inferred. They may be stated as follows:<sup>5</sup>

1. The ability to get the sense of what is read in the form of a single impression, evidenced by the statement of a generalization or a summary.
2. The ability to recall specific elements in material, evidenced by a knowledge of the facts presented in it or by the ability to follow directions contained therein.
3. The ability to apprehend the author's intention, indicated by the reader's conception of the purpose that prompts plot and action.

4. An emotional reaction, normally expressed by some personal coloring or feeling-tone that seems inextricably blended with the sense of what is read.

A critical examination of these outcomes gave rise to two assumptions. The first was that the ability to grasp the essential meaning of a selection in the form of a single impression is the outcome that is most frequently demanded of adults in the reading of general material. The second assumption was that a large amount of reading is done in order to gain specific information contained in the selection. Furthermore, since the ability to grasp the essential meaning seems to depend in a measure upon the ability to react satisfactorily to specific elements contained in the selection, it was assumed that any technique devised to measure the first outcome will indirectly measure the second.

Several important questions arose in the consideration of what seem to be the major outcomes of adult reading. Is the same measure of comprehension valid for both fiction and non-fiction? If the purposes and motives which prompt reading "to forget" are different from those which prompt reading "to learn," may not the major outcomes of the first be different from the major outcomes of the second? May not the outcomes of the former tend toward emotional rather than intellectual reactions, as in the case of the latter?

The implications of such questions as these were weighed carefully at the outset. It seemed clear from a survey of reading situations that different outcomes may predominate at different times. Sometimes all four outcomes appear to function about equally well. Again, all four may fail together, or a low quality in any one be accompanied by aberrations in the others. If such observations are well founded, then it seems probable that a direct measure of one outcome may be an indirect measure of another. Furthermore, the ability to react pleasurably or unpleasurably to a reading situation implies the ability to sense in general what is read. No attempt was made, therefore, to measure emotional reaction, except in so far as that outcome may be positively correlated with ability to comprehend the sense of what is read in the form of a general impression. The technique devised for measuring the ability to grasp the sense of what is read will be described in the following section.

<sup>5</sup> Outcomes numbered 1, 2, and 4 are similar to the major outcomes assumed by Dale and Tayler as measures of comprehension of technical material, represented by articles in the field of health: Edgar Dale and Ralph W. Tyler, "A Study of the Factors Influencing the Difficulty of Reading Materials for Adults of Limited Reading Ability," *Library Quarterly*, IV (July, 1934), 384-412.

*How to measure comprehension.*—In this study, the ability to grasp the essential meaning of a selection in the form of a single impression or generalization was measured by the success with which an individual identified the generalization in a series of statements relating to the selection. Two other methods of measurement, both more direct, were believed unsuited to a testing situation of the sort created here. The one method, to require the reader to state orally the impression gained from reading, seemed hopelessly tedious. The other, to exact a written statement of the general impression gained from reading, promised to be an invalid measure of comprehension for adults whose facility in written expression as well as facility in reading may be limited. Some evidence has been reported by Tyler to show that ability to formulate a generalization correlates closely with ability to check the best generalization in a multiple-choice test, as indicated by coefficients of .79 and .85.<sup>6</sup> Accordingly, the latter method of identifying the best generalization, in a series of statements, was adopted in this study as a valid and expeditious means of measuring a reader's ability to get the general sense of a selection in the form of a single impression.

In order to increase the reliability of the measure of comprehension, a second reaction to the material was required. This measure, like the first, was suggested by the Ohio study.<sup>7</sup> The assumption was made that a good test of comprehension is the success with which one formulates, or identifies, a generalization of a selection, and that it, furthermore, involves the ability to tell what is not in the selection or to identify in a series of statements the one that is false. In other words, if a reader has an accurate notion of what he has read in a selection, he should also be aware of what he has not read in the selection. Two reactions were therefore required for each test item as a measure of the reader's comprehension, defined in terms of the outcomes previously described.

*Form of test adopted.*—The multiple-choice test was adopted to measure comprehension as it has been defined here. This test used a number of disconnected paragraphs from reading materials previously selected as sources of test items. The method of selecting the paragraphs will be explained in the next section. Two reactions were required for each item to measure ability to get the general sense of the paragraph and to measure at the same time ability to recall specific information. The first reaction was the identification of the best summary of the paragraph in a series of five statements relating to the paragraph. The second was the recognition, in the series of statements, of the one not in the paragraph.

#### SELECTING TEST ITEMS

Test items of fiction and general informational material were chosen from a large number of sample paragraphs selected from representative books, magazines, and newspapers. The question of what kind of paragraphs to choose

<sup>6</sup> Ralph W. Tyler, "Ability to Use Scientific Method," *Educational Research Bulletin*, XI (January 6, 1932), 1-9.

<sup>7</sup> Dale and Tyler, *op. cit.*, pp. 6-7.

from representative reading material to serve as test items was answered by a consideration of several conditions previously established. These conditions were concerned with: (1) the outcomes of reading accepted here as measures of comprehension; (2) the nature of the tests to be constructed; (3) the kind of adult readers to be tested; and (4) the specific elements whose difficulty was to be established. Each of these conditions has been discussed in connection with earlier problems.

From a consideration of these four conditions, four criteria were established for selecting paragraphs, on the assumption that a paragraph which met all criteria would meet the conditions of the study and therefore be a valid test item. The criteria were stated in the form of the following principles:

1. Each item must be independent of the content preceding and following it in order that responses shall not require further acquaintance with the subject matter from which the item is drawn.

2. Each item must manifest a completeness, indicated by the development of a single unit of thought, in order that the reader can get a single impression of the general meaning of the item.

3. Each item must contain as many variants in expression as possible, in order that the identification of elements of difficulty in adult reading materials may be reliable.

4. Each item must be brief, in order not to discourage readers of limited ability, and in order to include a wide sampling of materials. An approximate length of one hundred words is arbitrarily established.

*The selection of "promising" samples.*—The first step in choosing sample paragraphs was to read hastily through a particular book, magazine, or newspaper, selected as a source of test items, with all of the foregoing principles in mind. Frequently a cursory glance sufficed to indicate whether a page contained usable paragraphs. All passages that seemed to meet the requirements were marked at the first reading. They were then examined critically with respect to the third principle, which directed attention toward variants in expression that might influence difficulty. Although it seemed reasonable to expect that a sampling which claimed to be representative of adult reading materials would, of necessity, be representative of difficulties inherent in them, it was believed necessary to make a definite attempt to select items with a wide range of expressional variants. As a result of such attention in selecting sample paragraphs, those finally used as test items contained forty-four of the variants listed in chapter iv in sufficient number to merit correlation.

Passages that appeared to be undesirable after careful scrutiny were eliminated, until there remained forty-six paragraphs of general informational content and forty-two paragraphs of fiction from which to choose test items. The desirability of a passage rested primarily on our personal judgment since length of paragraph was the only objective standard applied in the selection of sample paragraphs. Other objective standards were added, however, in selecting test items from the sample paragraphs.

*Analyzing sample paragraphs for elements of potential difficulty.*—The general plan of the study called for two tests, one of which would measure compre-



hension of fiction; and the other, of general non-fiction. In order that the tests might be adapted to groups of adults of various levels of ability, the plan further required that the tests should represent, so far as possible, a wide range of probable difficulty.

The next step, therefore, was to arrange the sample paragraphs into ranks—one for fiction and the other for non-fiction, each representing a scale of probable difficulty, as determined by the occurrence in the items of ten potential elements of difficulty. These were chosen somewhat arbitrarily from the list compiled in chapter iv. There seemed reason to believe, from the evidence presented in that chapter, that these elements would be the most reliable for selecting and ranking test items. From the list that follows, it may be noted that some of the elements had been used earlier in roughly designating the rank of books, magazines, and newspapers which were to serve as sources of test items.

The ten elements used in selecting items for the fiction and non-fiction tests were: percentage of easy words; number of different hard words; number of words not known to 90 per cent of sixth-grade pupils; percentage of monosyllables; percentage of polysyllables; number of prepositional and infinitive phrases; number of first-, second-, and third-person pronouns; percentage of different words; average sentence-length in syllables; and number of *e* words.

Each of the forty-six sample paragraphs of non-fiction and forty-two paragraphs of fiction was analyzed for the presence of these ten elements. The data were tabulated on large tabulation sheets in such a way that each paragraph, designated by letter, might be seen in relation to every other paragraph with respect to all ten elements.

*Comparison of findings.*—Each tabulation sheet was examined critically for the purpose of ascertaining the consistency with which a given paragraph held to a particular level of relative difficulty among other paragraphs represented on the sheet. Levels of difficulty were here defined in terms of deviations in the number or per cent of occurrence of an element in the direction of simplicity or complexity. If a paragraph showed marked deviation in one or more elements from its general level, as indicated by other elements, it was rejected. If several paragraphs held approximately the same place, some of them were eliminated.

The two tabulation sheets were next examined comparatively for the purpose of determining relative levels of difficulty represented by the two sets of paragraphs. This examination revealed two important findings: (1) that the non-fiction material, taken as representative of what adults are reading, extended farther in the direction of complexity than fiction; and (2) that selections of fiction reached a level of simplicity lower than general non-fiction. In order to make the scale of difficulty relatively comparable in the two tests, it was necessary to improve the "representativeness" of sources of test items by finding easier non-fiction material of a general informational type and more difficult fiction.

*Extending the range of probable difficulty represented by the tests.*—Very simple statements on informational subjects were found in a series of reading

texts designed for use in adult moonlight schools.<sup>8</sup> These texts are characterized by short, frequently repeated words and by brief, simple sentences. Narrative material, of a more complex sort than appeared to be represented by the samples already analyzed, was found in three novels, *The Return of the Native*,<sup>9</sup> *Ethan Frome*,<sup>10</sup> and *Youth*.<sup>11</sup> From these books sample paragraphs were obtained and entered on the tabulation sheets at their appropriate levels.

*Selection and ranking of test items.*—Since it was hoped that one value of the study would lie in its serviceableness in adapting reading materials to abilities of adults who are limited in their skill in reading, it seemed desirable to utilize an optimum of test items that could probably be read with some understanding by such persons. A few items whose difficulty was apparently beyond their comprehension were desired in order that the tests might be used to measure comprehension of heterogeneous groups. From a critical examination of the tabulated paragraphs it was possible to select as test items those paragraphs which seemed to show progressive stages of difficulty over a wide range. Twenty-five paragraphs in each type of material were selected as test items. This number was reduced later to twenty-four.

It must be repeated that the arrangement of items in each form represented merely a scale of relative difficulty, as determined by the occurrence of ten potential indicators of difficulty. Such an arrangement may seem to disregard the influence of other elements which had been set off as bearing probable relation to difficulty. Since the entire list of elements compiled in chapter iv had been kept in mind in choosing sample paragraphs, it was believed that the definite implications of a few "promising" elements, whose relationship to difficulty was already known for other types of material, were adequate for the final selection of test items.

#### PREPARING RESPONSES FOR TEST ITEMS

After selecting test items, the next important step was the preparation of a series of responses for each item from which the reader was to choose the one he thought the best summary of the selection and the one he thought the poorest.

*Number of responses.*—In every case five responses were formulated, as shown in the sample item on page 60. These represented the best summary statement of the thought in the paragraph; the worst summary statement, presenting something not in the paragraph; and three others, in approximately normal distribution between the two extremes. The use of at least four or five responses was believed to be distinctly advantageous in minimizing chance

<sup>8</sup> Cora Wilson Stewart, *Country Life Readers*, Books I and II. Richmond: Johnson Publishing Co., 1931.

<sup>9</sup> Thomas Hardy, *The Return of the Native* (New York: Charles Scribner's Sons, 1917), p. 116.

<sup>10</sup> Edith Wharton, *Ethan Frome* (New York: Charles Scribner's Sons, 1911), p. 142.

<sup>11</sup> Joseph Conrad, *Youth* (Garden City: Garden City Publishing Co., 1903), p. 192.

successes in multiple-choice tests.<sup>12</sup> Another advantage was believed to attend the use of five responses in the present study. It seemed probable that some adults could draw conclusions closer to either or both of the correct answers than could others. The finer measuring device would therefore provide a means of assigning credit for differences in ability with relative fairness and discrimination, the credit being determined by the reader's ability to choose the best and the poorest summary for each item.

*Formulating summary statements.*—The method followed in obtaining responses to the test items was to have three competent readers formulate two tentative summaries for each paragraph in the two tests. Each reader was asked to do three things:

1. To read each test item and then to formulate independently what he believed to be the best and the poorest summary of the thought in the paragraph. Caution was given to make the poorest summary sound plausible so that its poor quality would not be obvious.

2. To state each summary in language less difficult than the test item. This precaution was taken in order to prevent the later assignment of a degree of difficulty to an item that was truly the product of the difficulty for its responses.

3. To evaluate the summaries in joint conference with the other two readers and to select the best statements of the best and poorest summaries to use as test responses.

The three intervening responses between the best and the worst summaries were formulated later with the help of two of the readers. We then determined the order of arrangement of the five responses for each item by chance.

*Preliminary evaluation.*—Before the responses were accepted as final, the tests were given to adult groups to evaluate the responses. Two purposes prompted this step in the procedure. They were: to determine how well the responses had been scaled from best to poorest, and to discover the extent to which the wording of the responses involved difficulty.

The tests were given in mimeographed form to an undergraduate class at the University of Chicago, whose members were majoring in English and the Social Sciences, and to a graduate class in Education, meeting at the University College for a course called "The Use of Achievement Tests for Improvement of Instruction." The following instructions were attached to the test-sheets:

"Read over the twenty-five items in each test. After you have read an item, assign values to each of its five responses. Give a value of 1 to the response that is the best summary of the paragraph. Give 5 to the poorest summary. Distribute scores for the other three responses as you think they should be evaluated. If you believe a response differs only slightly from the best, indicate by a score near 1, possibly 1.5. If you believe two responses are equally good summaries, you may give each of them a ranking of 1.

"Similarly, if you believe one response is very close to the one you rate the lowest, you may give it a score of 4.5, or 4.8, or whatever your judgment dic-

<sup>12</sup> G. M. Ruch, *The Objective or New-Type Examination* (Chicago: Scott, Foresman & Co., 1929), p. 275.

tates. Also, if you think two responses are in all ways equally unsatisfactory you may rate each of them 5.

"After you have assigned values to each of the five responses, will you indicate how much difficulty you had in deciding which was the *best* response? And in deciding which was the *poorest* response? Do this by writing *E* for easy, *M* for medium, and *H* for hard on the lines provided for this record."

The administrator of the test took opportunity while the students carried on this evaluation to observe the amount of time utilized in reading the paragraphs and to estimate the amount needed to select the best and poorest responses. The evidence seemed to indicate that adults whose abilities were similar to those of university students could finish either test in a period of twenty or thirty minutes and that adults of lesser ability would probably require a longer period for answering items within their comprehension.

*Revision of test responses.*—Approximately thirty-five students evaluated all of the responses for both tests. Their reactions were tabulated and used as a basis for revision of the test responses. Two types of revision were made, one intended to improve the scaling of the responses from best to poorest summaries, and the other to obviate any difficulties discovered in determining which response was the best or the poorest summary.

In revising responses to improve the scaling, the following plan was used. If considerable disagreement was noted in ranking a given response, the statement was either modified in the direction of its most frequent ranking or it was rejected entirely and a new statement formulated.

In revision designed to overcome difficulties in choosing the response stating the best or the poorest summary, an effort was made to obviate the tendency to test judgment above comprehension. For example, if university students marked a summary statement *H*, it was evident that they had difficulty in selecting which was the best response in the series. If, in addition to indicating the hardness of selecting the response, they also rated a poor summary as best, or rated more than one response as best, it was evident that the best response was not discriminative. In such a case, a new best response was formulated which aimed at a higher quality of goodness as a summary statement than other responses in the series.

#### EVALUATING TEST RESPONSES

*Theory of evaluation.*—After responses of doubtful value were revised and critically examined by the readers who had first formulated them, the next step was to evaluate each response in order to determine the credit it should receive as a measure of comprehension. That is, it was essential that each response in a series should have a value, which would represent the amount of credit that an individual should receive for marking it the best and the amount that he should receive in case he marked it poorest. There was believed to be greater fairness attached to giving credit for every response than would attend giving credit for only the responses established as statements of the best and the poorest summaries. As was mentioned in the previous section, an attempt was made to scale the responses according to the goodness of the summary represented by them. It was assumed, therefore, that for every item there was a second response closer to the best than any other; and also a second re-

sponse closer to the poorest than any other. There was presumably an intermediate response, as close to the best as to the poorest.

If an individual should choose a second-rate response, he should receive credit indicating better comprehension than would have been indicated by choosing the intermediate response as "best" or "poorest." Although assigning credit for every response (which would account for varying degrees of merit) was less expeditious than assigning credit for only the best and the poorest summaries, it seemed a more valid measure of comprehension.

*Method of evaluation.*—In order to determine the worth of each response as a paragraph summary, nine persons who had had considerable experience with tests were asked to rate the five responses for each test item. Copies of both tests with their revised summaries were given to each reader. The same directions were given to them as had been given to the university groups, namely, (1) to signify the best response by a rating of 1, the poorest response by a rating of 5, and other responses by a rating which they judged valid; and (2) to indicate for each item the degree of difficulty experienced in selecting the best and the poorest responses.

When the ratings assigned to the five responses on each item in the tests were tabulated, practical unanimity was found among the judges in their rating of the best and the poorest response. Some disagreement, the extent of which will be discussed in succeeding paragraphs, was noted in the rating of other responses.

From the independent ratings of each response by nine judges, a value was calculated to be used in determining the credit received by any individual checking that response as best or poorest. The simple average of the nine ratings was taken as the mean value.

An examination of these mean values showed that, in many cases, the mean value of the best and the poorest response was 1 and 5, respectively. These values usually represented the average of identical ratings for these responses by all judges. Where such was the case, these values were considered "true" values of the responses in so far as the identical rating of the nine judges may be taken as representative of the average rating of an infinite number of judges.

Concerning the variability among ratings of other responses, the first question raised was: How well does the mean value of each response represent the true value which would be obtained from an infinite number of judges? The method followed in answering this question was to express the reliability of a mean value in terms of the standard deviation of the individual ratings for the response, divided by the square root of the number of judges rating the response; that is, in terms of  $\sigma_M = \frac{\sigma(\text{dis})}{\sqrt{N}}$ .<sup>13</sup> The meaning of standard errors of

<sup>13</sup> Henry E. Garrett, *Statistics in Psychology and Education* (New York: Longmans, Green & Co., 1926), p. 121.

Since the formula for  $\sigma(\text{dis}) = \sqrt{\frac{\sum D^2}{N}}$ , the formula for  $\sigma_M$  becomes  $\sqrt{\frac{\sum D^2}{N^3}}$ .

the mean values of the responses, obtained by this formula, may be illustrated as follows:<sup>14</sup>

Take response Number 1 in Item 1, Form 1. It was rated 2 by six judges and 3 by three judges. Its mean value is, therefore, 2.3. It has a standard error of .156, which means that the probable chances are two out of three that the true value lies within one standard error of 2.3, that is, within the limits  $2.3 + .156$  and  $2.3 - .156$ , or between 2.456 and 2.144.

The standard errors were used here to determine the significance of differences between adjacent values. Again, Item 1, Form 1, may be taken as an example. A comparison of the mean value for response Number 1, which is 2.3, with the mean value for response Number 3, which is 2.7, indicated that the one is not markedly better than the other. Since the standard errors, representing their deviations from the true values, are low, it was evident that the responses are more sharply evaluated than is shown by their mean values alone. The amount of difference between adjacent responses in other items was interpreted in a similar fashion.

*Reliability of judgments.*—Another approach to an evaluation of reliability was through the question: Are nine judges enough so that their composite mean values on one item are statistically reliable? To answer this question, one needs to know the average intercorrelation among the judges on each item and then apply the Spearman-Brown Prophecy-Formula to estimate the number of judges needed to attain a minimal reliability desired for a given item.<sup>15</sup> Frequently only an approximation to the average intercorrelation of judges is used, either the correlations between the ratings of two of the judges, randomly chosen, or an average of three or more intercorrelations from the total number. Rather than make use of such approximations, based on a few of the judges, we decided to make approximations based on all the judges for a part of the items. The formula used for solving the average intercorrelations makes use of actual ratings without computing any of the individual correlation coefficients.<sup>16</sup> Since the use of this simplified formula still involves a tremendous amount of labor for all items in the two tests, it was be-

<sup>14</sup> For individual ratings by the nine judges, the mean values, and the standard errors of the mean values, see: Bernice E. Leary, "Elements of Reading Materials Contributing to Difficulties in Comprehension on the Part of Adults" (Doctor's dissertation, Department of Education, University of Chicago, 1933), pp. 97-104.

<sup>15</sup> Truman L. Kelley, *Statistical Method* (New York: Macmillan Co., 1924), p. 218.

<sup>16</sup> The formula is stated as follows:

$$\bar{r} = \frac{1}{Nn(n-1)} \left\{ \sum \left[ S \left( \frac{X}{\sigma} \right) \right]^2 - N \left[ S \left( \frac{M}{\sigma} \right) \right]^2 \right\} - \frac{1}{n-1}, \text{ in which } N = \text{the number of responses; } n = \text{number of judges; } S \text{ means a summation for each response of } \frac{X_i}{\sigma_i} \text{ where } i =$$

$A, B, C, \dots, I$  judges;  $\frac{X}{\sigma} = \frac{\text{rating}}{\sigma}$  for one judge. See: Harold A. Edgerton and Herbert A. Toops, "A Formula for Finding the Average Intercorrelation Coefficient of Unranked Raw Scores without Solving Any of the Individual Intercorrelations," *Journal of Educational Psychology*, XIX (February, 1928), 131-38.

lieved that the average intercorrelation of selected items from each form would give results which might serve as a basis for estimating the reliability of the composite judgment for all items.

A range in reliability of judgments was obtained from average intercorrelations computed for items whose variability was greatest and least for all items, as indicated by their average standard errors. Items numbered 1 and 15 had the least and the greatest variability, respectively, in composite judgment for all items in Form 1, Item Number 6 having been cast out of the test for reasons that will be explained later. Among items in Form 2, those numbered, respectively, 19 and 23 had the least and the greatest variability, excluding Item 15, which had been rejected from the test along with Item 6 in Form 1.

The average intercorrelations were computed for these items and their values substituted for  $r_{11}$  in the Spearman-Brown Prophecy-Formula to ob-

TABLE LXXVIII  
RELIABILITY OF COMPOSITE JUDGMENT FOR ITEMS REPRESENTING THE  
RANGE OF VARIABILITY IN FORM 1 AND FORM 2

FORM 1				FORM 2			
Item	Num- ber of Re- sponses	Average Intercor- relations	Relia- bility	Item	Num- ber of Re- sponses	Average Intercor- relations	Relia- bility
1.....	5	.950	.994	19.....	5	.915	.989
15.....	5	.909	.976	23.....	5	.784	.970

tain their reliability coefficients.<sup>17</sup> Results are shown in Table LXXVIII. The following conclusions may be drawn from the facts presented in this table:

1. The reliability of composite judgments of nine judges for both forms of the test ranges from .994 to .970, when items with lowest and highest variability in judgment represent the range.

2. There is evidence that the nine judges used here would agree closely with another group of nine judges as to the relative value of test items in Form 1 and Form 2.

3. The nine judges agreed more closely with another group of nine, as indicated by the reliability coefficients, than their mean values agreed with the

<sup>17</sup> Formula for prediction is

$$r_{nn} = \frac{nr_{11}}{1 + (n-1)r_{11}}.$$

true values of responses (other than best and poorest), as indicated by the standard errors.

4. For purposes of this study, nine judges were reliable, since perfect reliability of the composite score would, of course, be possible only by using an infinite number of judges.

So far as reliability could be determined by the methods reported in this section, it was believed that the mean value of each response, representing the combined ratings of nine judges, might be taken as reliable measures of value.

#### RATING DIFFICULTY OF RESPONSES

*Method used.*—In addition to evaluating each test response by ratings from 1 to 5, the judges were asked to indicate by the letters *E*, *M*, and *H*, the degree of difficulty which they experienced in discriminating the best and the poorest response of each item. This difficulty is not the same as difficulty in comprehending the reading materials, since it is due to the wording of the response rather than to the meaning of the selection.

A somewhat arbitrary method, designated the 2-1-0 method, was utilized to give numerical values to the difficulty ratings. Each *H* rating was given 2 points; each *M* rating was given 1 point; and each *E* rating, 0 points. All the ratings of the nine judges were then tabulated by points, for the best and the poorest response in each paragraph. From these the total difficulty of each response was computed. For example, the best response for Item 1, Form 1, was rated *E* by eight judges and *M* by one judge. No judge rated it *H*. Its summated difficulty was therefore  $8 \times 0$  plus  $1 \times 1$  or 1. The poorest response for the same item, rated *E* by six judges, *M* by two judges, and *H* by one judge, had a difficulty of 4.

*Validity of the 2-1-0 method.*—Although the 2-1-0 method of rating difficulty is clearly arbitrary, it has been found to give results about identical with those of the deviation method,<sup>18</sup> which calculates values for an individual's ratings of *E*, *M*, and *H*, separately, in terms of the standard deviation from the individual's mean rating.<sup>19</sup> Since the 2-1-0 method of calculating difficulty scores thus appears to be valid, it was used in preference to the deviation method on account of its simplicity.

*Interpretation of difficulty values.*—From the relative values of *E*, *M*, and *H* assigned to each response, it was possible to determine whether variations in difficulty of choosing the best and the poorest responses were of enough significance to require weighting the value of the selections. Accordingly, the nu-

<sup>18</sup> Douglas Waples and Ralph W. Tyler, *What People Want to Read About* (Chicago: University of Chicago Press, 1931), pp. 173-74.

<sup>19</sup> The standard deviation value for an individual rating is calculated by the formula:  $\frac{M_x}{\sigma} = \frac{Y_1 - Y_2}{F}$ , in which  $\frac{M_x}{\sigma}$  signifies the mean value for a given rating expressed in standard deviation units;  $Y_1$  represents the left ordinate of the portion of the assumed normal curve which this rating represents;  $Y_2$  represents the right ordinate; and  $F$  signifies the fractional part of all the individual's ratings which are 2, 1, or 0, as the case may be. Holzinger, *op. cit.*, p. 221.



merical values of  $E$ ,  $M$ , and  $H$  were thrown into two frequency distributions for each test, one for the numerical difficulty assigned to choosing the best response; and the other, the poorest response. The modal value was then found by inspection to serve as a standard. A deviation of four points in either direction from the mode marked a limit above or below which the difficulty of a response was plainly distinct from the difficulty of other responses in the test. Approximately all of the best and poorest responses in both tests were found to deviate relatively little from the mode. This fact indicated that difficulty due to wording of the responses might be considered generally insignificant. Two exceptions were noted—in Item 6 of Form 1 and in Item 15 of Form 2. In both cases, the best and poorest responses deviated four and six points from their respective modes, indicating that these responses contained inherent difficulty due to wording.

The usual method of correcting for difficulty is weighting the response in the direction determined by the deviation. Although technically the weighting of test responses insures greater accuracy, practically weighted scores have been found to correlate so closely with unweighted scores that the work involved in deriving and using weights is considered unnecessary.<sup>20</sup> Since the weight of a series of scores is given by its variability, a series which has not been artificially weighted may be said to have a natural weight corresponding to its standard deviation.

The process of weighting having been shown to be not only cumbersome but more or less futile, it was decided to reject Item 6 from Form 1 and Item 15 from Form 2. With these omissions, the number of test items in each form was reduced to twenty-four.

#### ARRANGING THE TESTS IN FINAL FORM

With the rating of test responses for difficulty, the last major task in the construction of the tests was completed. A set of directions and a fore-exercise preceded the first item in each test form. They have been illustrated earlier in chapter iv.

Provision was made for obtaining personal data about the subject in spaces designated for that purpose on the cover page of each form. These data included name of subject, date of testing, age within nearest five years, last grade attended in day school, length of attendance in night school, amount of time devoted to reading per day, and name of occupation.

The arrangement of items in order of their probable difficulty has been described in a previous section. The tests were printed in booklet form to insure legibility and ease of handling.<sup>21</sup>

<sup>20</sup> Evidence for this statement is reported in the following references: Karl R. Douglass and Peter L. Spencer, "Is it Necessary to Weight Exercises in Standard Tests?" *Journal of Educational Psychology*, XIV (February, 1923), 109-112; C. W. Odell, "Further Data Concerning the Effect of Weighting Exercises in New-Type Examinations," *ibid.*, XXII (December, 1931), 700-704; Douglas E. Scates and Forest R. Noffsinger, "Factors Which Determine the Effectiveness of Weighting," *Journal of Educational Research*, XXIV (November, 1931), 280-85.

<sup>21</sup> Copies of Form 1 and Form 2 of the Adult Reading Test appear in Leary, *op. cit.*

## SCORING TEST ITEMS

The general plan adopted in the present study, as presented earlier, provided that varying degrees of merit were to be assigned to each item, according to the value of the responses indicated by the reader as the best and the poorest summary. This method of giving some credit for any response checked by the reader was believed to give a more discriminating measure of comprehension than the easier method of crediting only the selection of the truly best and poorest summaries. In accordance with this plan, values were derived for each response in the test items. Knowing the value of each response, we were able to calculate a reader's score on a test item by the method described in the following paragraph.<sup>22</sup>

For any response designated as poorest by "o," a score was given which represented the value previously obtained by averaging the ratings of nine judges. From this score was subtracted the value of the response designated as best by "✓." Hence the score on any test item was the difference between the value assigned to the poorest response and the value assigned to the best. Had all of the nine judges been in perfect agreement as to the rating of the best and the poorest responses, it may be seen that the best response would have always a value of 1, and the poorest, a value of 5. A reader who checked both responses correctly would receive a score representing the difference between 5 and 1, or 4. The reader who checked either or both responses incorrectly would receive a score less than 4. Actually, however, the average value assigned to any response in an item was frequently not an integer, but a decimal fraction.

To illustrate how the method of scoring was used, a test item from Form 2 will be taken as an example. In this item the best summary was given a value of 1.1; the second best, 1.6; the third best, 3; the fourth best, 3.6; and the poorest, 5. If a reader checked both the best and the poorest responses correctly, his score would be 5 minus 1.1, or 3.9, the highest score obtainable on that item. If he checked the worst response correctly, but checked the second best as best (a circumstance that could easily occur since the two responses had been closely evaluated), his score would be 5 minus 1.6, or 3.4. If he checked the worst response correctly, but chose the third best as best, his score would be markedly lower, being 5 minus 3, or 2. If he made the worst possible choice, that is, if he checked the poorest response as best and the best as poorest, his score would be 1.1 minus 5, or -3.9. It may be seen that the application of this method gives a possible range of scores for any test item from a theoretical +4 to -4, with many possible intervening scores expressed either integrally or decimally.

## ARE THE TESTS VALID?

Probably the most important single measure of the value of a test is the degree of validity possessed by it. Since the validity of the facts secured depends upon the validity of the measure used to obtain them, it is obviously true that

<sup>22</sup> We are indebted to Professor Ralph W. Tyler, of the Bureau of Educational Research, Ohio State University, Columbus, Ohio, for the method of scoring described here.

if a test does not measure what it purports to measure, the facts obtained through its use are worthless for their purpose. Unfortunately, it is impossible, or at least extremely difficult, to prove conclusively by direct methods that a test does or does not measure that which it is intended to measure.

Two difficulties were encountered in determining the validity of the tests. The first lay in the conditions attending the testing of adults, discussed in chapter iii. The second lay in obtaining a suitable criterion with which to correlate the results of the tests constructed for use in the study. Since it is seldom possible to carry on an extensive testing program with adults, it was necessary to use the time allowed for the investigation to the best advantage. Whatever test was taken as a criterion had of necessity to be brief. Furthermore, the heterogeneity of the groups tested demanded that the test should have norms for different adult levels of ability. An additional requisite was that the criterion measure the same aspect of comprehension as was measured by the tests constructed in this study.

The Monroe Standardized Silent Reading Test, although not altogether satisfactory, seemed to fit best the conditions of the situation. Since but four minutes are required to take the test, it could be administered on the same occasion as the Adult Reading Test. Moreover, the Monroe test is so constructed that the various forms of Test I can be used for grades 3, 4, and 5; those of Test II, for grades 6, 7, and 8; and forms of Test III, for grades 9 to 12. The scores on all the tests can then be transmuted to a common basal scale, represented by "B" Scores, which designate the grade level achieved in reading.

The aspect of comprehension measured by the Monroe test is the ability to secure information from reading content.<sup>23</sup> The ability is indicated by underlining or writing words according to directions. In the Adult Reading Test, comprehension is measured by the ability to grasp the general sense of what is read in the form of a summary statement. This ability was assumed to depend in a degree upon the ability to obtain specific information. A measure of the one ability, therefore, was believed to give a measure of the other. It is clear that the aspect of comprehension measured by the Monroe test is not the same as that measured by the Adult Reading Test. Whatever conclusions are presented regarding the validity of the latter test are made with certain reservations.

In the first place, a single criterion may give accurate evidence of validity of the test with which it is correlated only if the criterion itself is valid. No data are available pertaining to the validity of the Monroe test for testing reading comprehension of adults, although some evidence has been compiled relative to its validity at lower levels. Pressey, for example, found that comprehension, as measured by the Monroe test, correlated .27 with teachers' estimates of reading ability by a pooled rating. However, the validity of teachers' estimates as criteria was unknown.<sup>24</sup> Gates secured evidence of

<sup>23</sup> Walter S. Monroe, "Monroe's Standardized Silent Reading Tests," *Journal of Educational Psychology*, IX (June, 1918), 303-12.

<sup>24</sup> S. L. Pressey and L. W. Pressey, "The Relative Value of Rate and Comprehension Scores in Monroe's Silent Reading Test, as Measures of Reading Ability," *School and Society*, XI (June 19, 1920), 747-49.

greater validity by correlating the Monroe test with a series of other standardized reading tests.<sup>25</sup> He found a mean relationship of .72 with the Burgess Picture Supplement Test, of .60 with the Thorndike-McCall Reading Test, and of .75 with the composite comprehension tests, when correlations were based on scores for grades 3-6. He concluded that the correlation of .60 with the Thorndike-McCall test might be accounted for by the fact that each measures a quite different type of comprehension or measures it in a different way. Traxler's comparative study of the reading ability of junior high-school students indicated a relationship of .66 between the Monroe Standardized Silent Reading Test and the paragraph-meaning part of the Stanford Achievement Test; and a correlation of .56 between comprehension on the Monroe test and the Thorndike-McCall.<sup>26</sup> Evidence presented from these studies indicates that comprehension, as measured by the Monroe test, is not closely related with comprehension, as measured by other standardized tests, for lower levels of ability.

A second reservation that needs to be made in interpreting the data presented in this section has already been indicated. Low correlation between comprehension tests may be caused not by low validity but by the different aspects of comprehension which they measure. Correlations between the Monroe test and the Adult Reading Test, therefore, only qualifiedly indicate validity.

Comprehension scores of 756 adults were secured for the Monroe test and for both forms of the Adult Reading Test. The scores made on the first were then correlated with the scores made on Form 1 and Form 2 of the second. Table LXXIX presents the coefficients of correlation obtained for twelve combinations of groups.<sup>27</sup> It may be noted that in this table, evening-school groups, numbered 1, 2, and 3, were taken together, as were parent-teacher organizations, number 20 and 21, and other groups of a relatively homogeneous composition. While all but one coefficient of correlation, shown in Table LXXIX, are positive and significant, being more than four times their probable errors, they are not high enough to indicate close agreement between the two tests. Although the disparity in relationship may be due in part to the

<sup>25</sup> Arthur I. Gates, "An Experimental and Statistical Study of Reading and Reading Tests," *Journal of Educational Psychology*, XII (November, 1921), 445-64.

<sup>26</sup> Arthur Edwin Traxler, "The Measurement and Improvement of Silent Reading at the Junior-High-School Level" (Unpublished Doctor's dissertation, Department of Education, University of Chicago, 1932), p. 85.

<sup>27</sup> Group numbers refer respectively to: Dante Adult Day School; Englewood Evening School; J. Sterling Morton Evening School; Glenn Street Evening School; Berea Foundation Junior High School; Agricultural and Mechanical Arts Model School, grade 7; the A and M Model School, grade 8; the A and M Model Junior High School, grade 9; the A and M Model Senior High School, grade 10; the A and M Model Senior High School, grade 11; the A and M Model Senior High School, grade 12; Berea Academy; Martha Berry Senior High School, grade 9; Martha Berry Senior High School, grades 11-12; Rabun-Gap Nacoochee Mountain School, grade 10; Rabun-Gap Nacoochee Mountain School, grade 11; Berea College; Martha Berry College, Freshmen; Martha Berry College, Juniors; Hinsdale Parent-teachers' Association; and Congress Park Parent-teachers' Association.

unreliability of both tests, it is probable that they test somewhat different abilities. The fact that working times are very different in the two tests may also influence their validity. Since the Monroe test was administered before the Adult Reading Test, and since it is a timed test, it undoubtedly had the disadvantage. This seems likely in the case of adults who had never before taken a new-type test and for whose groups the validity was especially low.

Another means used to determine the extent of agreement between the two tests was in connection with the selection of "poorest" and "best" readers.

TABLE LXXIX

CORRELATIONS BETWEEN SCORES ON FORMS 1 AND 2 OF THE ADULT READING TEST AND THE MONROE STANDARDIZED SILENT READING TEST\*

FORM 1				FORM 2			
Group	Number of Cases	<i>r</i>	<i>P.E.</i>	Group	Number of Cases	<i>r</i>	<i>P.E.</i>
4†.....	13	.611		15, 16.....	40	.649 ± .062	
15, 16.....	40	.591 ± .069		4†.....	13	.543	
20, 21.....	83	.498 ± .056		20, 21.....	83	.459 ± .059	
5.....	90	.486 ± .054		5.....	90	.434 ± .058	
9, 10, 11.....	73	.478 ± .061		12.....	97	.419 ± .057	
1, 2, 3.....	67	.427 ± .068		13.....	44	.351 ± .088	
13.....	44	.413 ± .084		18, 19.....	89	.350 ± .062	
6, 7, 8.....	48	.379 ± .084		14†.....	14	.326	
18, 19.....	89	.335 ± .063		1, 2, 3.....	67	.308 ± .075	
14†.....	14	.332		9, 10, 11.....	73	.267 ± .074	
17.....	98	.295 ± .062		17.....	98	.252 ± .063	
12.....	97	.276 ± .063		6, 7, 8.....	48	.182 ± .095	

\* Cleary, *op. cit.*, pp. 66, 83.

† Probable errors for these groups were not computed because of the small number of cases.

When the "B" Scores obtained on the Monroe test by 756 adults were distributed, it was found that of the 190 adults who ranked below  $Q_1$  on the Adult Reading Test, 109, or about 58 per cent of the group, ranked below  $Q_1$  on the Monroe test. Of the 191 who ranked above  $Q_3$  on the Adult Reading Test, 98, or about 52 per cent of the group, ranked above  $Q_3$  on the Monroe test. This fact shows that "poorest" and "best" readers on one test tended to be so designated on the other, but again the agreement is not significant enough to indicate more than positive relationship between the two tests.

*The validity of test items.*—In the selection of test items for a test intended to measure a particular ability, one of the primary concerns of the test-maker is to secure individual items that are valid or discriminating. The discriminating power of a single test item refers to the degree to which success on that item by itself indicates possession of the ability which is being measured. An

item may be said to be perfect in discriminating power, when every individual who scores successfully on the item ranks higher on a scale of ability than any individual who fails the item. An item is said to have zero discriminating power when there is no systematic difference between the ability of the individuals who succeed on the item and those who fail. Items of all degrees of discrimination may be found between the extremes of perfect and zero discriminating power.<sup>28</sup>

Many suggestions are given in the literature of test construction relative to procedures for measuring the "goodness" of a single item. They range all the way from bi-serial  $r$ , which shows the relationship between success or non-success on the item and the criterion measured, to makeshift devices, which may approximate an accurate estimate of "goodness." Although bi-serial  $r$  gives the best index of the discriminating power of test items, since it is based upon all the data from a group, it has the disadvantage of complexity of calculation not found in empirical methods.

In the present study the procedure used was adapted from a simple one used in a study by Traxler at the suggestion of Professor Karl J. Holzinger.<sup>29</sup> Two assumptions were made. The first has already been made in this investigation. If the test papers of a group are divided into three classes, comprising the highest 25 per cent, the middle 50 per cent, and the lowest 25 per cent of the total scores, then the students in the upper 25 per cent are relatively superior and those in the lower 25 per cent are relatively inferior readers (provided that the entire test is valid). In the present study these two classes of readers have been designated, respectively, as "best" and "poorest" readers. The second assumption was that if a single test item is valid, that is, if it has discriminating power, most of the "best" readers will answer it correctly and most of the "poorest" readers will answer it incorrectly. Since every test item in this investigation was given some value, ranging from +4 to -4, "best" readers should receive higher scores on a discriminating item than "poorest" readers.

In the following formula, adapted from Traxler's study, the terms and their interpretations have been fitted to the conditions of this study:<sup>30</sup>

$$V = \frac{[(S_b + D_p) - (D_b + S_p)]}{T},$$

<sup>28</sup> E. F. Lindquist and Walter W. Cook, "Experimental Procedures in Test Evaluation," *Journal of Experimental Education*, I (March, 1933), 163-85.

<sup>29</sup> Traxler, *op. cit.*, p. 85.

<sup>30</sup> The original formula, based on definitely designated right ( $R$ ) and wrong ( $W$ ) responses of the upper ( $u$ ) and lower ( $l$ ) 25 per cent of the readers, was stated:

$$V = \frac{[(Ru + Wl) - (Wu + Rl)]}{N};$$

in which  $V$  is the validity of the test items,  $S_b$  is the actual score of "best" readers,  $D_b$  is the difference between the possible score and the actual score of "best" readers,  $S_p$  is the actual score of "poorest" readers,  $D_p$  is the difference between the possible score and the actual score of "poorest" readers, and  $T$  is the total possible score of "best" and "poorest" readers.

By this formula the index of discrimination may vary from +1.00 for the item with highest discriminating power to -1.00 for the item with lowest discriminating power. An item which is answered as well by "poorest" readers as by "best" readers has an index of validity of "0."

The  $V$  of each of the twenty-four test items in Forms 1 and 2 of the Adult Reading Test is shown in Table LXXX. The entries indicate that all of the

TABLE LXXX  
VALIDITY OF THE ITEMS IN FORMS 1 AND 2  
OF THE ADULT READING TEST

Item	Form 1	Form 2	Item	Form 1	Form 2
1.....	.666	.375	13.....	.609	.642
2.....	.435	.617	14.....	.550	.398
3.....	.705	.397	15.....	.564	.507
4.....	.446	.405	16.....	.577	.670
5.....	.484	.501	17.....	.647	.696
6.....	.428	.388	18.....	.833	.865
7.....	.617	.492	19.....	.610	.658
8.....	.564	.297	20.....	.692	.795
9.....	.652	.606	21.....	.685	.701
10.....	.867	.410	22.....	.749	.373
11.....	.697	.769	23.....	.671	.776
12.....	.805	.506	24.....	.712	.650

items have considerable validity, ranging for Form 1 from .867 to .428; and for Form 2 from .865 to .297. There was generally a marked difference between the performance of the "best" readers and the "poorest" readers. Exceptions may be noted in the case of items near the beginning of the tests, which were intended to be so easy as to be comprehended by all adult readers. That one item did not prove this easy is shown by the relatively high  $V$  for Item 1, Form 1. Since this item was selected because it contained a low percentage of elements of difficulty, a low  $V$  was anticipated. A probable explanation for the unexpected discriminating power of the item is the fact that the choice of the best response required, in addition to reading comprehension, the ability to calculate in mathematical terms from the content of the item that "I spent about five months making a boat I needed out of a big tree." An analysis of responses to this item seemed to indicate that "poorest" readers failed to check the best response, for the reason just given.

The cause of the lowest  $V$  in each test seemed apparent after critical analysis. In Form 1, the lowest  $V$ , .428, was found for Item Number 6, a selection from the Bible. It appeared from the comparative comprehension of "best" and "poorest" readers that familiarity with the passage had tended to reduce its discriminating power. The lowest  $V$  in Form 2, .297, was found for Item Number 8. Examination of the responses to this item indicated that the unintentional introduction of a "catch" word in the poorest response invalidated the item. The poorest response was "A little linseed oil gives a gloss to the feathers of a canary." The "catch" word *oil* was ignored by all readers, with the result that "best" readers tended to fail in seeing that the response was wrong about as often as "poorest" readers. With the exception of these items, the items in both tests showed generally rather high discriminating power.

ARE THE TESTS RELIABLE INSTRUMENTS FOR  
MEASURING ADULT COMPREHENSION?

The second most important fact which must be known about a test is the degree of reliability it possesses. Before producing evidence to show how well the adult reading tests measure whatever they do measure, we will briefly summarize the means used in the development of the tests to provide for reliability.

*Objectivity of scoring.*—If a test is perfectly objective, that is, if answers which are given credit are sharply defined in a key, and only those answers given credit, one factor of influence on reliability may be eliminated. In the present investigation, it should be recalled, all answers were given some credit, on the assumption that particular numerical values assigned to test responses provide a satisfactory scale for measuring the degree to which readers have attained the objectives measured by the tests. In order to reduce the influence of personal judgment in scoring, composite evaluations were secured for each response from a number of trained judges. That a high reliability of evaluation was obtained by these judges has been shown by coefficients of reliability ranging from .994 to .970. By the use of a scoring stencil, on which each response was marked with its estimated value, subjectivity of scoring was reduced to a minimum.

*Character of sampling included in the test items.*—Other things being equal, the more extensive the sampling the more reliable the test. In an attempt to increase the reliability of the measure, sample paragraphs were taken from a wide sampling of books, magazines, and newspapers, and as many of these were included in each test as could be reasonably answered by adults of limited reading ability in a testing period of one hour.

*The reliability of the tests.*—Data concerning the reliability of the tests developed in this investigation are presented in Table LXXXI. These data were obtained from the scores of 756 adults, who took both forms of the test. The correlations between Forms 1 and 2 varied from .779 for evening-school groups to .481 for colored groups in the A and M Junior High School. The mean coefficient of reliability was not calculated, nor was the coefficient of reliability



for the entire 756 subjects, since it may be materially affected by the heterogeneity of the total population from which the data were collected.

An interpretation of coefficients of reliability without recognition of the range of talent represented in the data from which they were computed is apt to be misleading. This consequence was avoided by measuring the variability of the differences between the obtained scores and the corresponding theoretical

TABLE LXXXI

RELIABILITY COEFFICIENTS, STANDARD DEVIATIONS, PROBABLE ERRORS OF SCORES, AND RATIOS BETWEEN THE PROBABLE ERRORS AND STANDARD DEVIATIONS OF SCORES ON ADULT READING TESTS\*

Group	$r$ P.E.	$\sigma_1$	$\sigma_2$	P.E.Score	P.E.Score/S.D.
1, 2, 3.....	.779±.032	22.75	17.70	6.41	.32
5.....	.778±.028	22.15	18.40	6.45	.32
15, 16.....	.737±.048	17.75	16.15	5.86	.35
14.....	.700	21.70	19.63	7.63	.37
13.....	.691±.051	22.95	22.65	8.55	.37
20, 21.....	.666±.041	11.15	15.15	5.13	.39
17.....	.665±.038	13.90	12.90	5.23	.39
9, 10, 11.....	.596±.051	18.15	12.92	6.66	.43
4.....	.567	19.30	13.59	7.30	.44
18, 19.....	.539±.050	17.65	15.40	7.57	.46
12.....	.519±.050	15.40	12.20	6.46	.47
6, 7, 8.....	.481±.075	14.45	12.95	6.66	.49

\*Coefficients of correlation and standard deviations are quoted from Cleary, *op. cit.*, p. 84.

cal true scores. The median deviation of the differences or the probable error of the scores was obtained by the formula:<sup>31</sup>

$$P.E.Score = .6745 \frac{\sigma_1 + \sigma_2}{2} \sqrt{1 - r_{12}}$$

in which  $\frac{\sigma_1 + \sigma_2}{2}$  represents the average standard deviations for Forms 1 and 2, and  $r_{12}$  represents the correlation of Forms 1 and 2.

Table LXXXI shows the probable error of the scores of different groups used in finding the correlation coefficients which are shown in the same table. The first probable error of 6.41 means that there is an even chance that a score made by an evening-school student on the test is within 6.41 points of his true score. For example, if an individual made a score of 68.9, the chances are even

<sup>31</sup> G. M. Ruch, *The Objective or New-Type Examination* (Chicago: Scott, Foresman & Co., 1929), p. 430.

that the average of his scores obtained from an infinite number of test forms would lie between 62.5 and 75.3. Since the highest scores obtainable on Forms 1 and 2 are, respectively, 92.2 and 91.4, the probable errors do not seem disproportionately large. The ratio of the probable errors to the standard deviations is between one-third and two-fifths for most groups.

Since no data from other adult tests are available for comparative purposes, no conclusions can be drawn with respect to the relative reliability of the adult reading tests developed in this study. That the reliability of the tests is hardly high enough to be considered entirely satisfactory must be granted, since they fall within the category defined by Ruch as "rather low."<sup>32</sup>

<sup>32</sup> *Ibid.*, p. 434.

## APPENDIX D

As stated in chapter iv, the identification of elements of difficulty depended on the correlation between the occurrence of the elements in a series of test items and the average reading score made by adult readers on those items. The method of tabulating individual scores and of obtaining average scores is described in the following paragraphs.

### TABULATION OF SCORES

Two procedures were followed in tabulating scores. One provided a compact record of each subject's scores for both test forms; the other afforded a

Form 2		— 45			√	o	o	√	√	o		√	o		√	o		√	o
S. Mor. N. Sch.		Dry Cleaner		3.8		3.3		3.8		2.9		3.9							
21				√		o		o		√		o		√		o		√	
W		99½		4.3		2.9		1.5		3.0		3.9		4.0					
M		35		7		6.7		2.4		3.0		3.7		-1.0					
8						√		o		o		√		o		√		o	
						3.7		3.7		3.7		4.0		2.7					
3		3		58.0		√		o		o		√							
						2.0		-2.9											

Item No.  
15 omitted from  
Form 2.

Item No.  
15 omitt-  
ed from  
Form 2.

FIG. 32.—Tabulating card for recording individual test scores.

Data recorded at the left are read down: Column I reads as follows: Sterling Morton Evening School, Student Number 21, white, male, age 35, last grade in school, 8, attendance at night school, 3 years, 3 months. Column II reads as follows: average reading per day, 45 minutes; occupation, dry cleaner; Monroe test, rate 99½, "B" score 4.3; comprehension 7, "B" score 6.7; total score on Form 2, 58.0.

Data recorded in other columns are read across as follows: score on first item, 3.8; on second item, 3.3; on third item, 3.8; and so on. Blank spaces indicate items not attempted.

means of determining average scores on all items of a test for a particular group. The first procedure involved the use of tabulating cards, one for each person for each test. These cards were made of tag-board, 5"×8", for convenient filing. Data from the test booklets were entered on the card according to definite spatial arrangement. Personal information furnished by the subject on the cover-page of his test booklet was entered on the left side of the card, and a

duplication of his checked responses for each item was indicated in the spaces provided in the main body of the card.

Figure 32 is a copy of one subject's record for Form 2. In making such a record, the subject's responses were first copied directly from his test booklet, by marking "√" and "o" in the spaces corresponding to the response order in the booklet. All test booklets could then be filed, and the cards substituted for further use. A stencil was designed to fit over the card, showing the value of

TABLE LXXXII

CRITERIA OF DIFFICULTY FOR ITEMS ON FORM I, REPRESENTED BY THE AVERAGE SCORE OF ALL READERS, "BEST" READERS, AND "POOREST" READERS

TEST ITEM	AVERAGE READING SCORE			TEST ITEM	AVERAGE READING SCORE		
	All Read- ers	"Best" Read- ers	"Poor- est" Read- ers		All Readers	"Best" Readers	"Poorest" Readers
1.....	2.6	3.7	1.1	13.....	2.4	3.4	1.1
2.....	2.3	3.0	1.5	14.....	2.3	3.1	1.0
3.....	2.1	3.3	0.5	15.....	2.4	3.4	1.2
4.....	2.6	3.2	1.5	16.....	1.9	2.8	0.7
5.....	2.5	3.2	1.5	17.....	2.5	3.6	1.0
6.....	3.0	3.7	2.0	18.....	1.9	3.4	0.1
7.....	2.6	3.8	1.3	19.....	2.4	3.2	0.9
8.....	2.2	3.2	1.0	20.....	2.1	3.3	0.7
9.....	2.0	3.0	0.6	21.....	1.9	3.2	0.6
10.....	2.4	3.8	0.4	22.....	2.0	3.5	0.5
11.....	2.1	3.3	0.7	23.....	1.9	3.1	0.7
12.....	1.9	3.4	0.2	24.....	1.7	3.2	0.4
Range.....					3.0-1.7	3.8-2.8	2.0-0.1
Mean.....					2.2±.070	3.3±.066	0.9±.058
S.D.....					.510±.050	.480±.047	.424±.041

each response in all paragraphs. It was then possible to make rapid calculation of the score for each test item by remembering the formula: 0 minus √ = score. The score for each item was then entered in the proper space, as shown in Figure 32. By adding algebraically all scores on the card, the total test score was obtained and entered at the bottom of Column 2. Although considerable labor was expended on the card tabulations, it appeared to be justified by the convenience of compact records.

## COMPUTING AVERAGE READING SCORES

The purpose of finding average scores was to obtain a criterion of difficulty for each test item that might be used in determining elements of difficulty

within the item. According to the plan described in chapter iv, a criterion of difficulty was obtained for each item for all readers, for "best" readers and for "poorest" readers. "Best" readers were those individuals whose combined scores on Forms 1 and 2 of the Adult Reading Test were above the third quartile. This group numbered 191. "Poorest" readers were those whose combined scores on the two test forms fell below the first quartile. One hundred ninety individuals were identified as "poorest" readers among the twenty-one groups tested.

TABLE LXXXIII

CRITERIA OF DIFFICULTY FOR ITEMS ON FORM 2, REPRESENTED BY THE AVERAGE SCORE OF ALL READERS, "BEST" READERS, AND "POOREST" READERS

TEST ITEM	AVERAGE READING SCORE			TEST ITEM	AVERAGE READING SCORE		
	All Read- ers	"Best" Read- ers	"Poor- est" Read- ers		All Readers	"Best" Readers	"Poorest" Readers
1.....	2.9	3.5	2.1	13.....	2.3	3.3	1.0
2.....	2.6	3.5	1.2	14.....	1.5	2.3	0.9
3.....	2.4	3.2	1.7	15.....	2.6	3.3	1.5
4.....	2.6	3.2	1.6	16.....	1.8	3.0	0.5
5.....	2.8	3.5	1.5	17.....	1.9	3.0	0.5
6.....	2.6	3.2	1.7	18.....	2.2	3.7	0.2
7.....	1.3	2.5	0.5	19.....	1.5	3.1	0.3
8.....	0.8	1.2	0.1	20.....	1.3	3.1	0.1
9.....	2.6	3.5	1.1	21.....	0.9	2.7	-0.1
10.....	3.0	3.6	2.0	22.....	0.7	1.6	0.2
11.....	1.3	2.8	-0.2	23.....	1.8	3.2	0.3
12.....	2.5	3.2	1.3	24.....	1.8	3.3	0.7
Range.....					2.9-0.7	3.7-1.2	2.1--0.2
Mean.....					2.0±.097	3.0±.095	0.9±.087
S.D.....					.707±.069	.693±.067	.633±.062

In finding the three sets of average scores, three sets of master-sheets were prepared. One recorded individual scores on each test item for each of 759 readers. The other two contained individual scores on each item for each "best" and "poorest" reader, respectively. Average reading scores on each item were then calculated for the three groups, as shown in Tables LXXXII, and LXXXIII. These scores are the criteria of difficulty used in identifying elements of difficulty shown in chapter iv.

## APPENDIX E

In Table LXXXIV are listed the coefficients of correlation obtained by correlating the forty-four elements of difficulty with the average reading score of three classes of readers and with each other.

# KEY TO TABLE LXXXIV

*A<sub>T</sub>*—Average reading score for total group  
*A<sub>B</sub>*—Average reading score for "best" readers  
*A<sub>P</sub>*—Average reading score for "poorest" readers

*B*—Number of *b* words  
*C*—Number of *c* words  
*D*—Number of *d* words  
*E*—Number of *e* words  
*F*—Number of *f* words  
*G*—Percentage of structural words  
*H*—Percentage of content words  
*I*—Percentage of easy words  
*J*—Number of words not known to 90 per cent of sixth-grade pupils

*K*—Percentage of different words  
*L*—Number of different hard words  
*M*—Percentage of monosyllables  
*N*—Percentage of bisyllables  
*O*—Percentage of polysyllables  
*P*—Average sentence-length in words  
*Q*—Average sentence-length in syllables  
*R*—Number of simple sentences  
*S*—Number of complex sentences  
*T*—Number of compound-complex sentences  
*U*—Number of explicit sentences

*V*—Number of asides  
*W*—Number of figures of speech  
*X*—Number of infinitive phrases  
*Y*—Number of prepositional phrases  
*Z*—Number of infinitive and prepositional phrases  
*A'*—Number of first-person pronouns  
*B'*—Number of third-person pronouns  
*C'*—Number of first-, second-, and third-person pronouns  
*D'*—Total number of sentences  
*E'*—Total number of words per paragraph  
*F'*—Number of easy words  
*G'*—Number of different words  
*H'*—Maximum syllabic sentence-length  
*I'*—Minimum syllabic sentence-length  
*J'*—Percentage of words not known to 90 per cent of sixth-grade pupils  
*K'*—Percentage of complex sentences  
*L'*—Percentage of compound-complex sentences  
*M'*—Percentage of simple sentences  
*N'*—Number of compound and compound-complex sentences  
*O'*—Percentage of compound and compound-complex sentences  
*P'*—Range of syllabic sentence-length  
*Q'*—Number of clauses introduced by conjunctive adverbs  
*R'*—Number of clauses introduced by relative pronouns  
*S'*—Number of clauses introduced by subordinate conjunctions





TABLE

# CORRELATIONS OF ELEMENTS AVERAGE READING SCORES

Average Reading Score	Average Reading Score			Elements of E																			
	A <sub>T</sub>	A <sub>B</sub>	A <sub>P</sub>	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
A <sub>T</sub>																							
A <sub>B</sub>	9538																						
A <sub>P</sub>	8667	4786																					
Elements																							
B	1828	0914	1678																				
C	-0695	0038	-0933	-1563																			
D	-0653	1977	-1530	-1774	1777	-																	
E	-2349	-1195	-2853	-0397	-0545	-1765																	
F	1463	0452	1268	1637	-0069	0316	0236																
G	2612	1733	2323	-0616	1251	0401	0917	2100															
H	-2612	-1733	-2323	0616	1251	0401	-0917	-2100	-1000														
I	9196	2714	5291	1182	-1205	-1130	0511	2180	6912	-6912													
J	-5134	-2181	-5497	-1734	0440	2497	0944	-2855	-6285	6285	-8453												
K	-3804	-1806	-4414	0095	-0160	0140	2404	2321	-4393	4393	-5593	4244											
L	-4864	-1911	-5434	-1239	1227	2195	0876	-2104	-6631	6631	-3623	8764	5983										
M	4326	1660	4883	2394	-0881	-1275	-2062	2340	5022	-5022	8360	-6323	-3989	-8188									
N	-1924	-1688	-1870	-2518	1518	-0303	1350	-1420	-2740	2740	-3538	2466	1775	3353	-4724								
O	-3796	-0774	-4275	-1145	0207	1596	1564	-2479	-4310	4310	-7423	8003	3488	7396	8613	0283							
P	-5217	-4311	-4458	-2500	-1080	2612	1679	-0968	-0805	0805	-3978	4853	0758	3903	-4458	0691	4621						
Q	-4720	-2888	-4572	-2688	-1124	2452	1675	-2193	-2594	2594	-5732	6599	1707	5980	-6572	1050	6872	9156					
R	3693	3698	2582	1960	0206	-2126	-1185	-1157	0242	-0242	2226	-2395	-0433	-1871	2472	0581	-3089	-7749	-6915				
S	1526	8057	2553	2076	2748	-1603	-1567	1530	-1214	1214	1832	-2678	1062	-1716	1887	-0392	-1927	-3497	-3051	1012			
T	2046	2485	1578	-0517	-1695	0164	-2324	0303	3764	-3764	2643	-1826	-2731	-2524	2156	-1701	-1455	1594	0468	-2059	-5211		
U	4823	3803	4190	2349	1219	-2350	-3984	-0209	1207	-1207	4207	-4635	-0885	-3618	4233	-0483	-4345	-5447	-7865	8241	4919	-1945	
V	-0371	0794	-2112	0916	-0156	-0081	0924	1453	-0734	0734	-1472	0639	3651	1190	-0813	0305	0829	2361	2420	-3339	0620	0281	
W	-2329	0884	-3767	0856	-0744	3419	0679	-3416	-2647	2647	-5871	4126	0539	4416	-2834	-0603	3501	1732	2681	0336	-1700	-0908	
X	1368	0384	2596	-0573	-0345	-1547	-1146	1119	2150	-2150	2620	-0794	-2033	2754	1365	-0718	-1147	-1353	-1712	0590	0248	2228	
Y	-3447	-0625	-3695	-2248	-1070	2809	3246	0082	-0619	0619	-5094	5061	1075	5193	-4932	1747	4288	4790	4890	-0665	-5293	1250	
Z	-2833	-0500	-2712	-2951	-1241	2336	2341	0907	0166	-0166	-4307	4983	0392	4325	-4674	1545	4024	4092	4399	-2347	-5407	2179	
A	1942	2717	1105	-0479	-0391	-2693	-0107	0244	2156	-2156	2630	-2912	0741	-1835	2518	0497	-2576	-3349	-3489	3605	2085	0789	
B	3293	1500	3070	3448	0344	-0517	-2431	1576	2186	-2186	3948	-4541	-3275	-3799	4003	-2312	-3404	-3897	-4021	1549	2077	1738	
C	4756	3668	4502	2326	-0035	-2843	-1499	0932	4080	-4080	6116	-7133	-1897	-5369	3931	-1623	-5781	-6396	-6593	4273	7682	0647	
D	4311	3364	3711	2978	1407	-2265	-0859	0191	0953	-0953	3748	-4371	-6414	-3154	4107	-0602	-4144	-5101	-7519	7771	5092	-1987	
E	0912	1681	0604	1614	-0040	7521	-0327	-0457	0139	-0139	0796	-0184	-1910	0629	0414	-1262	0272	0739	0638	0203	1559	0274	
F	5110	2321	5180	1633	-1287	-0258	0727	1798	6520	-6520	3517	-2475	-5590	8836	6036	-3651	-7021	-3542	-5184	2086	2015	2647	
G	-2910	-0753	-3666	0641	-0336	1356	2039	1931	-4197	4197	-5074	4044	6899	6027	-3721	1227	3938	0786	1879	-0234	-1932	-2399	
H	-2740	-3018	-4070	-2230	-0584	2886	1290	-1251	-2691	2691	-5968	6309	2180	6039	-5796	1956	5770	7943	8038	-5498	-3340	0876	
I	-4913	-4808	-4059	-2230	-0277	1063	2755	-1159	-1197	1197	-2574	4137	0849	2398	-4041	0257	4517	6506	0084	-7212	-1677	0896	
J	-4020	-2269	-4086	-0857	-0058	2004	0749	-1677	-4694	4694	-7190	8774	3784	6575	-6882	1732	6639	4361	5547	-2677	-2100	-0442	
K	-2288	-3594	-0392	-0936	2103	0356	1047	1551	-2419	2419	-1196	0841	2323	1123	-1435	0022	1870	2818	2776	-4843	6736	-4777	
L	0597	1140	0231	-1191	-2013	0214	3625	-0323	3378	-3378	1105	-0478	-2511	-1067	0732	-0632	-0501	4986	3115	-3364	-5022	8597	
M	1801	2784	0964	-0013	-0853	-1406	-1564	-1851	-0421	0421	-0356	0443	-0054	0194	0179	0816	-0484	-4740	-3707	7889	-3213	-1440	
N	1414	1942	0655	0379	1760	1024	2413	-0444	3762	-3762	2880	-2499	-2744	2464	2432	-0823	-3328	-0431	-1260	-0826	-5203	6820	
O	-0067	0637	-0750	-0080	-2123	1215	3599	-0999	3613	-3613	1520	-0896	-2344	-1371	0765	-0180	0867	3276	2041	-3746	-5711	7315	
P	-3214	-1141	-2786	-1241	-0244	2807	0434	-1484	-3161	3161	-5926	5682	2250	6119	-5199	1347	5126	5497	6006	-3169	-3306	0626	
Q	0940	-0181	0185	1935	0132	0849	-0547	1363	2146	-2146	3676	-1417	-2641	-3762	3267	-4128	1264	1312	-0968	-2034	0295	1935	
R	1167	0282	2341	-0482	0000	0985	-1877	1178	0932	-0932	0671	-0523	0214	-0523	0671	-2021	0461	0814	1188	-0481	3999	-0283	
S	-1601	-1579	-1772	-1075	1811	-1219	0796	-0068	0231	-0231	-1309	-0187	2686	1950	-1651	1302	1393	1441	0811	-2357	2871	-0291	





## APPENDIX F

Table LXXXV shows the predicted difficulty of 350 books, obtained by the regression equation for variables 1.25678, described on page 138 of chapter iv. Difficulty is expressed in terms of the average comprehension score that adults of limited reading ability would probably make if tested on the material. As in the case of true scores obtained by actual testing, high predicted scores indicate selections easily comprehended, and low scores, selections difficult to comprehend.

A graphical presentation of the books listed here appears in Figure 23, chapter vi.

TABLE LXXXV  
PREDICTED DIFFICULTY OF 350 BOOKS

No.	Book	Predicted Index of Difficulty
1.	Abraham, Robert Morrison. <i>Winter Night's Entertainments; a Book of Pastimes for Everybody</i> . Dutton, 1933.....	1.11
2.	Adams, H. C. <i>Travelers' Tales</i> . Boni, 1927.....	.54
3.	Adams, James Truslow. <i>The Epic of America</i> . Little, 1931...	.15
4.	Adams, Randolph G. <i>The Gateway to American History</i> . Little, 1927.....	.87
5.	Adams, Randolph G. <i>Pilgrims, Indians and Patriots</i> . Little, 1928.....	.87
6.	Aitchison, Allison, and Uttley, Marguerite. <i>Across Seven Seas to Seven Continents</i> . Bobbs, 1925.....	.93
7.	Akeley, Carl E. <i>In Brightest Africa</i> . Garden City, 1923.....	.82
8.	Alcott, Louisa M. <i>Little Women</i> . Little, 1915.....	.42
9.	Aldrich, Bess Streeter. <i>A Lantern in Her Hand</i> . Appleton, 1928	.86
10.	Allen, Frederick Lewis. <i>Only Yesterday</i> . Harper, 1931.....	.06
11.	Anderson, Robert Gordon. <i>Those Quarrelsome Bonapartes</i> . Century, 1927.....	.52
12.	Andrews, Margaret Lockwood. <i>The Complete Book of Parties</i> . Funk, 1932.....	.88
13.	Andrews, Mary R. S. <i>The Perfect Tribute</i> . Scribner, 1912....	.74
14.	Anthony, Katherine. <i>Queen Elizabeth</i> . Knopf, 1929.....	.86
15.	Antin, Mary. <i>At School in the Promised Land</i> . Houghton, 1911	.86
16.	Antin, Mary. <i>The Promised Land</i> . Houghton, 1912.....	.86
17.	Arless, George. <i>Up the Years from Bloomsbury; an Autobiography</i> . Little, 1928.....	.46
18.	Auslander, Joseph, and Hill, F. E. <i>The Winged Horse</i> . Doubleday, 1928.....	.92

## TABLE LXXXV—Continued

No.	Book	Predicted Index of Difficulty
19.	Austen, Jane. <i>Pride and Prejudice</i> . Grosset, 1931.....	.46
20.	Austin, Mary. <i>The Land of Journey's Ending</i> . Century, 1924..	.23
21.	Bailey, Temple. <i>Contrary Mary</i> . Grosset, 1914.....	1.03
22.	Balzac, Honoré de. <i>Père Goriot</i> . Little, 1931.....	.38
23.	Banks, Helen Ward. <i>The Story of Mexico</i> . Stokes, 1926.....	.40
24.	Barnes, Gerald. <i>Swimming and Diving</i> . Scribner, 1922.....	.55
25.	Barnes, James. <i>Drake and His Yeomen</i> . Macmillan, 1899....	.69
26.	Barnes, Parker T. <i>House Plants, and How To Grow Them</i> . Doubleday, 1909.....	.88
27.	Barrymore, John. <i>Confessions of an Actor</i> . Bobbs, 1926.....	.62
28.	Bartlett, Robert A. <i>The Log of Bob Bartlett</i> . Putnam, 1928...	.86
29.	Barton, Bruce. <i>What Can a Man Believe?</i> Bobbs, 1927.....	.86
30.	Bates, Sylvia Chatfield. <i>Moby Dick</i> (adapted). Scribner, 1928	.75
31.	Bauer, M., and Peyser, E. <i>How Music Grew</i> . Putnam, 1925..	.57
32.	Beach, Rex. <i>The Silver Horde</i> . Burt, 1909.....	.82
33.	Beals, Carleton. <i>Brimstone and Chili; a Book of Personal Experiences in the Southwest and in Mexico</i> . Knopf, 1927.....	.41
34.	Beard, Annie E. S. <i>Our Foreign-Born Citizens</i> . Crowell, 1922..	.65
35.	Becker, May Lamberton. <i>Adventures in Reading</i> . Stokes, 1927	.62
36.	Becker, May Lamberton. <i>Books as Windows</i> . Stokes, 1929...	.57
37.	Beraud, Henri. <i>Twelve Portraits of the French Revolution</i> . Little, 1928.....	.53
38.	Berge, Victor, and Lanier, Henry. <i>Pearl Diver; Adventuring over and under Southern Seas</i> . Doubleday, 1930.....	.52
39.	Birkhead, Alice. <i>The Story of the French Revolution</i> . Crowell, 1923.....	.65
40.	Bok, Edward. <i>The Americanization of Edward Bok; an Autobiography</i> . Scribner, 1921.....	.83
41.	Borup, George. <i>A Tenderfoot with Peary</i> . Stokes, 1911.....	.63
42.	Bowers, Claude G. <i>The Tragic Era</i> . Houghton, 1929.....	.19
43.	Bowman, Charles Ellis, and Percy, A. L. <i>Fundamentals of Book-keeping and Business</i> . American Book, 1926.....	1.07
44.	Boswell, James. <i>The Life of Samuel Johnson</i> . Modern Library, 1931.....	.23
45.	Boyd, James. <i>Marching On</i> . Scribner, 1927.....	.74
46.	Bridgman, George. <i>Constructive Anatomy</i> . Bridgman, 1920...	1.08
47.	Brigham, Louise. <i>Box Furniture</i> . Century, 1910.....	1.24
48.	Bromfield, Louis. <i>The Green Bay Tree</i> . Stokes, 1924.....	.69
49.	Browne, Lewis. <i>Stranger Than Fiction</i> . Macmillan, 1925....	.67
50.	Bryan, George S. <i>Edison; the Man and His Work</i> . Knopf, 1926	.54
51.	Buck, Pearl S. <i>The Good Earth</i> . Day, 1931.....	.81
52.	Bullen, Frank T. <i>The Cruise of the Cachalot</i> . International Book, 1899.....	.24

TABLE LXXXV—Continued

No.	Book	Predicted Index of Difficulty
53.	Burnham, Smith. <i>Our Beginnings in Europe and America</i> , Winston, 1918.....	.90
54.	Burns, Walter Noble. <i>The Saga of Billy the Kid</i> . Doubleday, 1926.....	.58
55.	Burns, Walter Noble. <i>Tombstone</i> . Doubleday, 1927.....	.69
56.	Burt, Emily Rose. <i>Planning Your Party</i> . Harper, 1927.....	.86
57.	Byrd, Richard E. <i>Skyward</i> . Cornwall, 1928.....	.49
58.	Canfield, Dorothy. <i>The Deepening Stream</i> . Harcourt, 1930...	.62
59.	Cantor, Eddie. <i>My Life Is in Your Hands</i> . Harper, 1928....	.63
60.	Carnegie, Dale. <i>Lincoln the Unknown</i> . Century, 1932.....	.76
61.	Carroll, Gladys Hasty. <i>As the Earth Turns</i> . Macmillan, 1933..	.86
62.	Cary, Katharine T., and Merrell, Nellie D. <i>Arranging Flowers throughout the Year</i> . Dodd, 1933.....	.54
63.	Casey, Robert J. <i>The Lost Kingdom of Burgundy</i> . Century, 1923.....	.59
64.	Casey, Robert J. <i>Four Faces of Siva</i> . Bobbs, 1929.....	.56
65.	Cather, Willa Sibert. <i>The Song of the Lark</i> . Houghton, 1915..	.82
66.	Cendrars, Blaise. <i>Sutter's Gold</i> . Harper, 1926.....	.73
67.	Center, Stella Stewart. <i>The Worker and His Work</i> . Lippincott, 1926.....	.48
68.	Chambers, Robert W. <i>Cardigan</i> . Harper, 1901.....	.31
69.	Chase, Stuart. <i>A New Deal</i> . Macmillan, 1932.....	.29
70.	Chekhov, Anton. <i>The Lady with the Dog, and Other Stories</i> . Macmillan, 1928.....	.68
71.	Churchill, Winston. <i>The Crisis</i> . Macmillan, 1901.....	.87
72.	Churchill, Winston. <i>Richard Carvel</i> . Grosset, 1914.....	.67
73.	Clark, Barrett H. <i>How To Produce Amateur Plays</i> . Little, 1921.....	.72
74.	Clark, Keith. <i>The Spell of Spain</i> . Page, 1914.....	.65
75.	Claudy, C. H. <i>The First Book of Photography</i> . McBride, 1918	.76
76.	Coffin, Charles Carleton. <i>The Boys of '76</i> . Harper, 1876....	.82
77.	Coffin, Charles H. <i>How To Study Pictures</i> . Century, 1918....	.43
78.	Collins, A. Frederick. <i>The Book of the Microscope</i> . Appleton, 1923.....	.71
79.	Colum, Padraic. <i>Cross-Roads in Ireland</i> . Macmillan, 1930...	.94
80.	Conner, Ralph. <i>The Sky Pilot</i> . Revell, 1899.....	.84
81.	Connolly, James B. <i>The Book of the Gloucester Fishermen</i> . Day, 1927.....	.84
82.	Cooper, Courtney Ryley. <i>Go North, Young Man!</i> Little, 1929	.32
83.	Davies, Blodwen. <i>Romantic Quebec</i> . Dodd, 1932.....	.56
84.	Davis, William Stearns. <i>A Friend of Caesar</i> . Macmillan, 1922	.53
85.	Davis, William Stearns. <i>Life in Elizabethan Days</i> . Harper, 1930.....	.33

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No.	Book	Predicted Index of Difficulty
86.	Daudet, Alphonse. <i>Tartarin of Tarascon</i> . Little, 1927.....	.44
87.	Deeping, Warwick. <i>Sorrell and Son</i> . Knopf, 1926.....	.71
88.	D'Esque, Jean Louis. <i>A Count in the Fo'c'sle</i> . Brentano's, 1932.....	.87
89.	Defoe, Daniel. <i>Robinson Crusoe</i> . Scott, Foresman, 1913. (Unaltered from sixth edition, 1722.).....	— .26
90.	DeKruif, Paul Henry. <i>Microbe Hunters</i> . Harcourt, 1926.....	.70
91.	Dickens, Charles. <i>David Copperfield</i> (condensed by R. Graves). Harcourt, 1934.....	.85
92.	Dickens, Charles. <i>The Personal History of David Copperfield</i> . Burt, n.d.....	.16
93.	Dimnet, Ernest. <i>The Art of Thinking</i> . Simon, 1928.....	.51
94.	Dix, Mark H. <i>An American Business Adventure; the Story of Henry H. Dix</i> . Harper, 1928.....	.59
95.	Doyle, A. Conan. <i>The White Company</i> . Harper, 1894.....	.45
96.	DuChaillu, Paul B. <i>Country of the Dwarfs</i> . Harper, 1928.....	.92
97.	Duguid, Julian. <i>Green Hell</i> . Century, 1931.....	.40
98.	Dumas, Alexandre. <i>The Three Musketeers</i> . McNally, 1923....	.69
99.	Earhart, Amelia. <i>The Fun of It; Random Records of My Own Flying and of Women in Aviation</i> . Putnam, 1932.....	.62
100.	Eaton, Jeanette. <i>A Daughter of the Seine</i> . Harper, 1929.....	.55
101.	Eaton, Jeanette. <i>Young Lafayette</i> . Houghton, 1932.....	.45
102.	Eddy, Clyde. <i>Down the World's Most Dangerous River</i> . Stokes, 1929.....	.56
103.	Edwards, Isabel M. <i>Glove-Making</i> . Pitman, 1929.....	.78
104.	Eells, Elsie Spicer. <i>South America's Story</i> . McBride, 1931....	.64
105.	Ekrem, Selma. <i>Unveiled; the Autobiography of a Turkish Girl</i> . Washburn, 1930.....	.86
106.	Eliot, George. <i>Silas Marner</i> (edited by A. E. Hancock). Scott, Foresman, 1899.....	.13
107.	Ellis, Anne. " <i>Plain Anne Ellis</i> "; <i>More about the Life of an Ordinary Woman</i> . Houghton, 1931.....	.87
108.	Ellsberg, Edward. <i>On the Bottom</i> . Cornwall Press, 1928.....	.71
109.	Erskine, John. <i>The Delight of Great Books</i> . Bobbs, 1928.....	.55
110.	Fairbank, Janet Ayer. <i>The Bright Land</i> . Houghton, 1932....	.74
111.	Finger, Charles J. <i>Courageous Companions</i> . Longmans, 1929..	.86
112.	Finger, Charles J. <i>David Livingston</i> . Doubleday, 1927.....	.69
113.	Finger, Charles J. <i>Footloose in the West; Being the Account of a Journey to Colorado and California and Other Western States</i> . Morrow, 1932.....	.58
114.	Ferber, Edna. <i>Cimarron</i> . Grosset, 1929.....	.78
115.	Ferber, Edna. <i>Fanny Herself</i> . Stokes, 1917.....	.82
116.	Ferber, Edna. <i>Show Boat</i> . Grosset, 1926.....	.79

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No.	Book	Predicted Index of Difficulty
117.	Ferris, Helen, and Moore, Virginia. <i>Girls Who Did</i> . Dutton, 1927.....	1.00
118.	Fierro Blanco, Antonio de. <i>The Journey of the Flame</i> . Houghton, 1933.....	.40
119.	Fleming, Peter. <i>Brazilian Adventure</i> . Scribner, 1934.....	.55
120.	Forster, Edward M. <i>A Passage to India</i> . Harcourt, 1924.....	.61
121.	Fosdick, Harry Emerson. <i>Twelve Tests of Character</i> . Association Press, 1928.....	.68
122.	France, Anatole. <i>The Crime of Sylvestre Bonnard</i> . Harper, 1890.....	.67
123.	Frank, Harry A. <i>A Vagabond Journey around the World</i> . Century, 1920.....	.40
124.	Frank, Leonhard. <i>Carl and Anna</i> (translated into Basic English by L. W. Lockhart). Trubner, 1930.....	.99
125.	French, George W. <i>Photography for the Amateur</i> . Folk, 1922..	.62
126.	Friese, John F. <i>Farm Blacksmithing</i> . Manual Arts Press, 1921	1.13
127.	Gardener, Elmer Ellsworth. <i>Better Typewriting</i> . Prentice-Hall, 1931.....	.75
128.	Garnett, David. <i>Pocahontas</i> . Harcourt, 1933.....	.67
129.	Garretson, Edith May. <i>Home and Health in a New Land</i> . Scribner, 1927.....	1.57
130.	Gaye, Phoebe Fenwick. <i>Vivandière!</i> Liveright, 1929.....	.66
131.	Gibbons, John. <i>Afoot in Italy</i> . Dutton, 1932.....	.68
132.	Gibbs, Philip. <i>Since Then; the Disturbing Story of the World at Peace</i> . Harper, 1930.....	.39
133.	Gide, Charles. <i>First Principles of Political Economy</i> . Harrap, 1922.....	.75
134.	Goldberger, Henry H. <i>America for Coming Citizens</i> . Scribner, 1922.....	.90
135.	Goldsmith, Oliver. <i>The Vicar of Wakefield</i> . Macmillan, 1922..	.25
136.	Goldstein, H., and Goldstein, V. <i>Art in Everyday Life</i> . Macmillan, 1929.....	.90
137.	Gordon, Jan and Cora. <i>Two Vagabonds in Spain</i> . McBride, 1923.....	.70
138.	Gras, Felix. <i>The Reds of the Midi; an Episode of the French Revolution</i> (translated by C. A. Janvier). Appleton, 1923.....	.71
139.	Grey, Zane. <i>Riders of the Purple Sage</i> . Grosset, 1912.....	.92
140.	Greene, Anne Bosworth. <i>Lighthearted Journey</i> . Century, 1930	.35
141.	Grenfell, Wilfred Thomason. <i>Tales of the Labrador</i> . Houghton, 1916.....	.66
142.	Groves, Ernest R. and Gladys H. <i>Wholesome Childhood</i> . Houghton, 1924.....	.71
143.	Hammett, Charles Edward. <i>Major Sport Fundamentals</i> . Scribner, 1927.....	.70



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No.	Book	Predicted Index of Difficulty
144.	Hamsun, Knut. <i>Growth of the Soil</i> . Knopf, 1930. . . . .	.91
145.	Harris, Stanley. <i>Baseball—How To Play It</i> . Stokes, 1925. . . . .	.97
146.	Hartman, Gertrude. <i>These United States and How They Came To Be</i> . Macmillan, 1932. . . . .	.78
147.	Hathaway, Esse V. <i>The Book of American Presidents</i> . Whit- tlesey House, McGraw, 1931. . . . .	.80
148.	Hawks, Frank. <i>Speed</i> . Putnam, 1931. . . . .	.50
149.	Hemon, Louis. <i>Maria Chapdelaine</i> . Grosset, 1924. . . . .	.31
150.	Henderson, Rose. <i>Little Journeys in America</i> . Southern, 1923. . . . .	.54
151.	Henry, O. <i>The Four Million</i> . Doubleday, 1922. . . . .	.70
152.	Heary, Robert Selph. <i>Story of the Confederacy</i> . Garden City, 1931. . . . .	.43
153.	Herdman, Marie Louise. <i>History of the United States</i> . Stokes, 1916. . . . .	.70
154.	Hervey, Harry. <i>King Cobra; an Autobiography of Travel in French Indo-China</i> . Cosmopolitan, 1927. . . . .	.38
155.	Hewitt, Edward Ringwood. <i>Telling on the Trout</i> . Scribner, 1926. . . . .	.72
156.	Heyward, DuBose. <i>Peter Ashley</i> . Farrar, 1932. . . . .	.73
157.	Heyward, DuBose. <i>Mamba's Daughters</i> . Doubleday, 1929. . . . .	.65
158.	Hibben, Thomas. <i>The Carpenter's Tool Chest</i> . Lippincott, 1933. . . . .	.98
159.	Hildebrand, Arthur Sturges. <i>Magellan</i> . Harcourt, 1924. . . . .	.62
160.	Hill, Janet McKenzie. <i>The Up-to-Date Waitress</i> . Little, 1922. . . . .	.74
161.	Hindus, Maurice. <i>Red Bread</i> . Smith, 1931. . . . .	.60
162.	Hodgins, Eric, and Magoun, F. A. <i>Sky High; the Story of Avia- tion</i> . Little, 1929. . . . .	.58
163.	Hogue, Wayman. <i>Back Yonder; an Ozark Chronicle</i> . Balch, 1932. . . . .	.97
164.	Holdridge, Desmond. <i>Pindorama</i> . Minton, 1933. . . . .	.68
165.	Hough, Emerson. <i>The Covered Wagon</i> . Grosset, 1922. . . . .	.76
166.	Hubbell, Jay B. <i>The Enjoyment of Literature</i> . Macmillan, 1929. . . . .	.65
167.	Huberman, Leo. <i>"We, the People"</i> . Harper, 1932. . . . .	.68
168.	Hueston, Ethel. <i>Coasting Down East</i> . Dodd, 1924. . . . .	.27
169.	Hulit, Leonard. <i>The Salt-Water Angler</i> . Appleton, 1924. . . . .	.61
170.	Ilin, M. <i>New Russia's Primer; the Story of the Five-Year Plan</i> (translated from the Russian by George S. Counts and Nucia P. Lodge). Houghton, 1931. . . . .	.97
171.	Ilin, M. <i>What Time Is It?</i> Lapshin, 1932. . . . .	1.04
172.	Irving, Washington. <i>The Bold Dragoon</i> . Knopf, 1930. . . . .	.56
173.	Irwin, Margaret. <i>Royal Flush; the Story of Minette</i> . Harcourt, 1932. . . . .	.57
174.	Jaffe, Bernard. <i>Crucibles</i> . Simon, 1930. . . . .	.69
175.	James, Bessie R., and James, Marquis. <i>Six Foot Six; the Heroic Story of Sam Houston</i> . Bobbs, 1931. . . . .	.83

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No.	Book	Predicted Index of Difficulty
176.	Johnson, Charles H. L. <i>Famous American Athletes of Today</i> . Page, 1928.....	.53
177.	Johnson, Martin E. <i>Safari; a Saga of the African Blue</i> . Put- nam, 1928.....	.64
178.	Johnston, Marjorie. <i>Domination</i> . Appleton, 1930.....	.38
179.	Judd, Alfred. <i>The Conquest of the Poles; and Modern Adventures in the World of Ice</i> . Nelson, 1924.....	.25
180.	Kang, Younghill. <i>The Grass Roof</i> . Scribner, 1931.....	.92
181.	Keller, Helen. <i>The Story of My Life</i> (School Edition). Hough- ton, 1904.....	.80
182.	Kellock, Harold. <i>Houdini; His Life Story</i> . Harcourt, 1928....	.55
183.	Kirkpatrick, Frank Home. <i>Public Speaking</i> . Doran, 1923....	1.22
184.	Klein, Paul E. <i>Shoe Repairing</i> . Bruce, 1926.....	.88
185.	Knipe, Alden Arthur. <i>Everybody's Washington</i> . Dodd, 1931..	.60
186.	Komroff, Manuel. <i>Coronet</i> . Grosset, 1930.....	.97
187.	Krapp, George Philip. <i>America; the Great Adventure</i> . Knopf, 1924.....	.75
188.	Kurlbaum, Margarete Siebert. <i>Mary, Queen of Scots</i> (translat- ed by Mary A. Hamilton). Harcourt, 1929.....	.53
189.	Lacoste, Jean Rene. <i>Lacoste on Tennis</i> . Morrow, 1928.....	.80
190.	Lamb, Harold. <i>The Crusades</i> . Doubleday, 1930.....	.54
191.	Lang, Andrew. <i>The Conquest of Montezuma's Empire</i> . Long- mans, 1928.....	.44
192.	Lavarre, William J. <i>Up the Mazaruni for Diamonds</i> . Jones, 1922.....	.81
193.	Lawton, Mary. <i>Schumann-Heink, the Last of the Titans</i> . Mac- millan, 1928.....	1.15
194.	Lee, Ettie. <i>Silas Marner</i> (adaptation). Macmillan, 1928....	1.24
195.	Leonard, Jonathan Norton. <i>Loki; the Life of Charles Proteus Steinmetz</i> . Doubleday, 1929.....	.76
196.	Lewis, Sinclair. <i>Babbitt</i> . Harcourt, 1922.....	.66
197.	Leys, James Farquarson, Jr. <i>After You, Magellan!</i> Century, 1927.....	.28
198.	Lighty, Kent and Margaret. <i>Shanty-Boat</i> . Century, 1930....	.60
199.	Lindbergh, Charles A. <i>We</i> . Putnam, 1928.....	.64
200.	Lippman, Walter. <i>A Preface to Morals</i> . Macmillan, 1929....	.56
201.	Lipton, Sir Thomas. <i>Lipton's Autobiography</i> . Duffield, 1932..	.55
202.	Lisitzky, Gene. <i>Thomas Jefferson</i> . Viking, 1933.....	.66
203.	London, Jack. <i>The Call of the Wild</i> . Grosset, 1903.....	.74
204.	London, Jack. <i>Cruise of the Snark</i> . Donohue, 1908.....	.98
205.	Lovelace, Delos W. <i>Rockne of Notre Dame</i> . Putnam, 1931....	.67
206.	Lovelace, Maude Hart. <i>Petticoat Court</i> . Day, 1930.....	.78

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No.	Book	Predicted Index of Difficulty
207.	Lowman, Guy Sumner. <i>Practical Football, and How To Teach It</i> . Barnes, 1927.....	.95
208.	Lucas, William Palmer. <i>The Health of the Runabout Child; the Journey from His Mother's Lap to the School Gate</i> . Macmillan, 1923.....	.60
209.	Ludwig, Emil. <i>July '14</i> . Putnam, 1929.....	.42
210.	MacGregor, Mary. <i>The Story of France</i> . Stokes, 1920.....	.70
211.	Madsen, Alfred S., and Lukowitz, J. J. <i>Problems in Furniture Design and Construction</i> . Bruce, 1928.....	.93
212.	Magoffin, R. V. D., and Davis, Emily. <i>Magic Spades, the Romance of Archaeology</i> . Holt, 1929.....	.58
213.	Major, Charles. <i>When Knighthood Was in Flower</i> . Grosset, 1898.....	.70
214.	Manning, Sybilla, and Donaldson, A. M. <i>Fundamentals of Dress Construction</i> . Macmillan, 1926.....	1.19
215.	Markey, Morris. <i>This Country of Yours</i> . Little, 1932.....	.81
216.	Marshall, Henrietta Elizabeth. <i>An Island Story</i> . Stokes, 1920.....	1.07
217.	Martin, Harry Brownlow. <i>What's Wrong with Your Game?</i> Dodd, 1930.....	.88
218.	Martin, Martha Evans. <i>The Friendly Stars</i> . Harper, 1907....	.71
219.	Martini, Herbert E. <i>Color</i> . Bridgman, 1930.....	.99
220.	Masefield, John. <i>Gallipoli</i> . Macmillan, 1917.....	.72
221.	Mason, Caroline Atwater. <i>The Spell of Southern Shores; or, From Sea to Sea in Italy</i> . Page, 1915.....	.47
222.	Mason, Gregory. <i>Columbus Came Late</i> . Century, 1931.....	.41
223.	Maternity Center Association of New York City. <i>Maternity Handbook</i> . Putnam, 1932.....	1.16
224.	Maurois, André. <i>Disraeli</i> . Lane, 1927.....	.31
225.	Maynard, Theodore. <i>De Soto and the Conquistadores</i> . Longmans, 1930.....	.62
226.	McBride, Robert Medill. <i>Romantic Czechoslovakia</i> . McBride, 1930.....	.03
227.	McKready, Kelvin. <i>A Beginner's Star-Book</i> . Putnam, 1923..	.42
228.	McMahon, John R. <i>Wright Brothers</i> . Little, 1930.....	.48
229.	Meadowcroft, William H. <i>The Boy's Life of Edison</i> . Harper, 1921.....	.58
230.	Melville, Herman. <i>Moby Dick</i> . Modern Library, 1926.....	.28
231.	Miller, Janet. <i>Jungles Preferred</i> . Houghton, 1931.....	.71
232.	Mills, Dorothy. <i>The Book of the Ancient Greeks</i> . Putnam, 1925	.68
233.	Minnigerode, Meade. <i>The Fabulous Forties</i> . Putnam, 1924...	.41
234.	Mitchell, Lucy Sprague. <i>Horses, Now and Long Ago</i> . Harcourt, 1926.....	1.08
235.	Mitchell, S. Weir. <i>Hugh Wynne</i> . Burt, 1897.....	.78

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No.	Book	Predicted Index of Difficulty
236.	Montgomery, L. M. <i>Anne of Green Gables</i> . Page, 1908.....	.84
237.	Moore, Charles W. <i>The Mental Side of Golf</i> . Liveright, 1929..	.70
238.	Morton, Henry C. V. <i>The Call of England</i> . McBride, 1933...	.78
239.	Morton, Henry C. V. <i>In Search of Scotland</i> . Dodd, 1930.....	.51
240.	Mowrer, Edgar Ansel. <i>Germany Puts the Clock Back</i> . Morrow, 1933.....	.14
241.	Muller, Charles G. <i>How They Carried the Goods</i> . Harcourt, 1932.....	.62
242.	Munroe, Kirk. <i>The Flamingo Feather</i> . Harper, 1923.....	.48
243.	Nisenson, Samuel, and Parker, Alfred. <i>Minute Biographies</i> . Grosset, 1931.....	.64
244.	Nordhoff, Charles, and Hall, James N. <i>Men against the Sea</i> . Little, 1934.....	.48
245.	O'Brien, John S. <i>By Dog Sled for Byrd; 1,600 Miles across Ant- arctic Ice</i> . Rockwell, 1931.....	.75
246.	Okey, Thomas. <i>The Art of Basket-Making</i> . Pitman, 1912....	.68
247.	Overstreet, Harry Allen. <i>About Ourselves</i> . Norton, 1927.....	.91
248.	Parker, Cornelia Stratton. <i>German Summer</i> . Liveright, 1932..	.55
249.	Parsons, Geoffrey. <i>The Land of Fair Play</i> . Scribner, 1919....	1.02
250.	Parsons, Geoffrey. <i>The Stream of History</i> . Scribner, 1928....	.68
251.	Partridge, Bellamy. <i>Amundsen, the Splendid Norseman</i> . Stokes, 1929.....	.77
252.	Patri, Angelo. <i>School and Home</i> . Appleton, 1925.....	1.11
253.	Perkins, Lucy F. <i>Aesop's Fables</i> . Stokes, 1908.....	.76
254.	Phelan, Vincent. <i>The Care and Repair of the Home</i> . Doubleday, 1931.....	.91
255.	Picken, Mary Brooks. <i>How To Make Draperies</i> (Singer Sewing Library, No. 4). Singer Sewing Machine Co., 1930.....	.91
256.	Poe, Edgar Allen. <i>The Gold Bug</i> (adapted as <i>The Gold Insect</i> in basic English). Trubner, 1932.....	.81
257.	Polk, Ralph W. <i>The Practice of Printing</i> . Manual Arts, 1926..	.96
258.	Powell, E. Alexander. <i>Undiscovered Europe</i> . Washburn, 1932.	.15
259.	Pupin, Michael. <i>From Immigrant to Inventor</i> . Scribner, 1925..	.60
260.	Rawlings, Marjorie K. <i>South Moon Under</i> . Scribner, 1933...	.85
261.	Remarque, Erich Maria. <i>All Quiet on the Western Front</i> . Gros- set, 1928.....	.80
262.	Repplier, Agnes. <i>Père Marquette</i> . Doubleday, 1929.....	.68
263.	Richardson, William L., and Owen, Jesse M. <i>Literature of the World</i> . Ginn, 1922.....	.64
264.	Rinehart, Mary Roberts. <i>Nomad's Land</i> . Doran, 1922.....	.66
265.	Rinehart, Mary Roberts. <i>Tenting To-Night</i> . Doubleday, 1928	.89
266.	Robert, Henry M. <i>Robert's Rules of Order Revised</i> . Scott, Fores- man, 1915.....	.75

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No.	Book	Predicted Index of Difficulty
267.	Robinson, James Harvey. <i>The Mind in the Making</i> . Harper, 1921. ....	.43
268.	Robinson, Will H. <i>Under Turquoise Skies; America's Southwest from the Days of the Ancient Cliff-Dwellers to Modern Times</i> . Macmillan, 1928. ....	.34
269.	Roche, Mazo de la. <i>Jalna</i> . Little, 1928. ....	.68
270.	Rockwell, Frederick Frye. <i>Gardening under Glass</i> . De la Mare, 1928. ....	.44
271.	Rogers, Agnes, and Allen, F. L. <i>The American Procession</i> . Harper, 1933. ....	.15
272.	Rolland, Romain. <i>Jean-Christophe</i> . Holt, 1910. ....	.23
273.	Rolvaa, O. E. <i>Giants in the Earth</i> . Harper, 1929. ....	.69
274.	Roosevelt, Franklin D. <i>Looking Forward</i> . Day, 1933. ....	.70
275.	Roosevelt, Theodore. <i>Stories of the Great West</i> . Century, 1909	.60
276.	Ross, Leland M., and Grobin, A. W. <i>This Democratic Roosevelt; the Life Story of "F.D."</i> Dutton, 1932. ....	.53
277.	Rush, Mary Wheeler. <i>The Ignoramus Garden Book; a Practical Handbook for the Beginner</i> . Sears, 1931. ....	.73
278.	Russell, Phillips. <i>John Paul Jones</i> . Brentano's, 1927. ....	.42
279.	Sabatini, Raffael. <i>The Banner of the Bull</i> . Grosset, 1927. ....	.61
280.	Sabatini, Rafael. <i>Scaramouche</i> . Grosset, 1921. ....	.82
281.	Sandburg, Carl. <i>Abe Lincoln Grows Up</i> . Harcourt, 1926. ....	.58
282.	Sandburg, Carl, and Angle, Paul M. <i>Mary Lincoln</i> . Harcourt, 1932. ....	.52
283.	Sawyer, Robert V., and Perkins, Edwin. <i>Water Gardens and Goldfish</i> . De la Mare, 1928. ....	.60
284.	Seabrook, William B. <i>Jungle Ways</i> . Harcourt, 1931. ....	.59
285.	Sedgwick, Henry Dwight. <i>France; a Short History of Its Politics, Literature, and Art from Earliest Times to the Present</i> . Little, 1929. ....	.33
286.	Seed, T. Rutherford. <i>Basket Work; a Practical Handbook</i> . Oxford University Press, 1927. ....	1.00
287.	Shay, Frank. <i>Here's Audacity! (American legendary heroes)</i> Macaulay, 1930. ....	.86
288.	Sichel, Edith Helen. <i>The Renaissance</i> . (Home University of Modern Knowledge. No. 27.) Holt, 1914. ....	.32
289.	Singmaster, Elsie. <i>The Book of the Colonies</i> . Doubleday, 1929. .	.71
290.	Singmaster, Elsie. <i>The Book of the United States</i> . Doubleday, 1926. ....	.69
291.	Siringo, Charles A. <i>Riata and Spurs</i> . Houghton, 1927. ....	.78
292.	Skinner, Otis. <i>Footlights and Spotlights</i> . Bobbs, 1924. ....	.55
293.	Slocum, Joshua. <i>Sailing Alone around the World</i> . Century, 1900. ....	.58

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No.	Book	Predicted Index of Difficulty
294.	Smith, Alfred E. <i>Up to Now; an Autobiography</i> . Viking, 1929..	.63
295.	Smith, André. <i>The Scenewright</i> . Macmillan, 1927.....	.53
296.	Snedeker, Caroline Dale. <i>The Spartan</i> . Doubleday, 1922....	.78
297.	Soule, George. <i>The Useful Art of Economics</i> . Macmillan, 1929	.60
298.	Steele, Fletcher. <i>Design in the Little Garden</i> . Atlantic Monthly Press, 1924.....	.66
299.	Steffens, Lincoln. <i>The Autobiography of Lincoln Steffens</i> . Har- court, 1931.....	.63
300.	Stevenson, Robert Louis. <i>Treasure Island</i> . Scribner, 1921....	.64
301.	Stewart, Cora Wilson. <i>Country Life Readers</i> , Book I. Johnson, 1915.....	1.84
302.	Stewart, Cora Wilson. <i>Country Life Readers</i> , Book II. John- son, 1916.....	1.33
303.	Stewart, Cora Wilson. <i>Country Life Readers</i> , Book III. John- son, 1917.....	1.04
304.	Stote, Dorothy. <i>Making the Most of Your Looks</i> . Brentano's, 1926.....	.89
305.	Stribling, T. S. <i>Teeftallow</i> . Doubleday, 1926.....	.69
306.	Sublette, Clifford M. <i>The Scarlet Cockerel</i> . Little, 1929.....	.43
307.	Suckow, Ruth. <i>Bonney Family</i> . Knopf, 1928.....	.86
308.	Sullivan, Mark. <i>Our Times; 1900-1925</i> . Scribner, 1930.....	.51
309.	Sullivan, Mark. <i>Our Times; the Turn of the Century</i> . Scribner, 1927.....	.14
310.	Tappan, Eva March. <i>When Knights Were Bold</i> . Houghton, 1911.....	.66
311.	Tarkington, Booth. <i>Penrod</i> . Grosset, 1914.....	.71
312.	Thom, Douglas A. <i>Everyday Problems of the Everyday Child</i> . Appleton, 1929.....	.36
313.	Thomas, Lowell. <i>With Lawrence in Arabia</i> . Garden City, 1924	.39
314.	Thomason, John W., Jr. <i>Fix Bayonets!</i> Scribner, 1926.....	.59
315.	Tipton, Edna S. <i>Table Decorations for All Occasions</i> . Stokes, 1924.....	.90
316.	Tracy, Louis. <i>The Wings of the Morning</i> . Grosset, 1903.....	.54
317.	Trine, Ralph Waldo. <i>In Tune with the Infinite</i> . Bobbs, 1897..	.86
318.	Tschiffely, A. F. <i>Tschiffely's Ride; Ten Thousand Miles in the Saddle from Southern Cross to Pole Star</i> . Simon, 1933.....	.47
319.	Tunney, Gene. <i>A Man Must Fight</i> . Houghton, 1932.....	.75
320.	Turgenev, Ivan S. <i>Fathers and Sons</i> . Dutton, 1922.....	.43
321.	Twain, Mark. <i>The Adventures of Tom Sawyer</i> . Harper, 1922..	.86
322.	Usher, Roland G. <i>The Story of the Great War</i> . Macmillan, 1919	.72
323.	Van Loon, Hendrik Willem. <i>America</i> . Boni, 1927.....	.24
324.	Van Loon, Hendrik Willem. <i>Ancient Man</i> . Boni, 1920.....	.67
325.	Van Loon, Hendrik Willem. <i>The Story of Mankind</i> . Boni, 1921	.47

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No.	Book	Predicted Index of Difficulty
326.	Van Loon, Hendrik Willem. <i>Van Loon's Geography; The Story of the World We Live In</i> . Simon, 1932.....	.46
327.	Van Metre, T. W. <i>Trains, Tracks and Travel</i> . Harcourt, 1931	1.08
328.	Villiers, Alan J. <i>By Way of Cape Horn</i> . Holt, 1930.....	.73
329.	Wadhams, Caroline R. <i>Simple Directions for the Chambermaid</i> . Longmans, 1917.....	1.11
330.	Waln, Nora. <i>The House of Exile</i> . Little, 1933.....	.57
331.	Walpole, Hugh. <i>Fortitude</i> . Doubleday, 1913.....	.67
332.	Washington, Booker T. <i>Up from Slavery</i> . Doubleday, 1920...	.72
333.	Welzl, Jan. <i>Thirty Years in the Golden North</i> . Macmillan, 1932	.94
334.	West, Michael. <i>Robinson Crusoe</i> —New Method Readers, Supplementary Reader III. Longmans, 1931.....	2.06
335.	Weyman, Stanley J. <i>Under the Red Robe</i> . Grosset, 1923.....	.91
336.	Wharton, Edith. <i>Ethan Frome</i> . Scribner, 1911.....	.68
337.	White, Stewart Edward. <i>Daniel Boone, Wilderness Scout</i> . Allyn & Bacon, 1926.....	.76
338.	White, William C. <i>These Russians</i> . Scribner, 1931.....	.65
339.	Wilder, Thornton. <i>The Woman of Andros</i> . Boni, 1930.....	.86
340.	Williams, Albert Rhys. <i>The Russian Land</i> . New Republic, 1927.....	.51
341.	Willson, Beckles. <i>Canada</i> (Romance of Empire Series). Nelson, 1933.....	.47
342.	Winkler, John K. <i>John D.; a Portrait in Oils</i> . Blue Ribbon, 1929.....	.63
343.	Winn, Mary Day. <i>The Macadam Trail; Ten Thousand Miles by Motor Coach</i> . Knopf, 1931.....	.16
344.	Wister, Owen. <i>The Seven Ages of Washington</i> . Macmillan, 1917	.08
345.	Woodburn, James A., and Moran, Thomas F. <i>The Makers of America</i> . Longmans, 1922.....	.83
346.	Wooley, C. Leonard. <i>Ur of the Chaldees</i> . Scribner, 1930.....	.28
347.	Wright, Eugene. <i>The Great Horn Spoon</i> . Bobbs, 1928.....	.53
348.	Wright, Harold Bell. <i>The Winning of Barbara Worth</i> . Burt, 1911.....	.83
349.	Wyss, David. <i>Swiss Family Robinson</i> . Harper, 1909.....	.34
350.	Wyss, David. <i>Swiss Family Robinson; in Words of One Syllable</i> . Altemus, 1900.....	.70

## APPENDIX G

Table LXXXVI lists the reading textbooks for Grades II-IX used in interpreting areas of difficulty represented by adult books in terms of elementary grade levels for which they are structurally appropriate. How the books were used for this purpose is explained in chapter vi.

TABLE LXXXVI

TEXTBOOKS IN READING USED IN THE INTERPRETATION OF AREAS OF  
DIFFICULTY REPRESENTED BY 350 ADULT BOOKS

- Bolenius, Emma Miller. *Literature in the Junior High School*, Books I, II, and III. Houghton, 1926-28.
- Bryce, Catharine T.; Hardy, Rose Lees; and Turpin, Edna. *Newson Readers*, Books II, III, IV, V, and VI. Newson, 1927-29.
- Coleman, Bessie; Uhl, Willis; and Hosic, James. *The Pathway to Reading*, Books II, III, IV, V, and VI. Silver, Burdett, 1925-26.
- ELSON, William H.; Gray, William S.; and Keck, Christine M. *Elson Basic Readers*, Books II, III, IV, V, VI. Scott, Foresman, 1931.
- Engleman, J. O., and McTurnan, Lawrence. *Guide Books to Literature*, Books I, II, and III. Laidlaw, 1925-26.
- Freeman, Frank N.; Storm, Grace E.; Johnson, Eleanor M.; and French, W. C. *Child Story Readers*, Books II, III, IV, V, and VI. Lyons & Carnahan, 1927-29.
- Gates, Arthur I.; Huber, Miriam Blanton; and Ayer, Jean Y. *The Work-Play Books*, Books II, III, IV, V, and VI. Macmillan, 1930-32.
- Greenlaw, Edwin; Miles, Dudley; Stratton, Clarence; and Keck, Christine M. *Literature and Life*, Books I, II, and III. Scott, Foresman, 1929-33.
- Haggerty, Melvin E., and Smith, Dora V. *Reading and Literature*, Books I, II, and III. World Book Co., 1927-28.
- Hardy, Marjorie. *New Stories*, Book II; *Best Stories*, Book III. Wheeler, 1926-27.
- Hill, Howard C.; Lyman, Rollo L.; and Moore, Nelle E. *Reading and Living*, Books I, II, and III. Scribner, 1930.
- Ringer, Edith Hope; Sewell, J. W.; Harris, Albert Mason; Stockton, Helen M.; and Downie, Lou Chase. *Citizenship Readers*, Books II, III, IV, V, VI. Lippincott, 1930.
- Lewis, Wm. D.; Rowland, A. L.; Marshall and Gehres. *New Silent Readers*, Books II, III, IV, V, VI, VII, and VIII. Winston, 1930-31.
- Lyman, Rollo, and Hill, Howard C. *Literature and Living*, Books I and II. Scribner, 1925.
- Manly, J. M.; Rickert, Edith; and Leubric, Nina. *Good Reading*, Books II, III, IV, V, VI. Scribner, 1926-28.



TABLE LXXXVI—*Continued*

- Patterson, Samuel White. *Bobbs-Merrill Literature Series*, Books I, II, and III. Bobbs, 1928.
- Pennell, Mary, and Cusack, Alice. *The Children's Own Readers*, Books II, III, IV, V, and VI. Ginn, 1929.
- Ross, J. M., and Schweikert, H. C. *Adventures in Literature*, Books VII, VIII, and IX. Harcourt, 1927-28.
- Suzzallo, H.; Freeland, G.; McLaughlin, K. L.; and Skinner, A. *Fact and Story Readers*, Books II, III, IV, V, VI, VII, and VIII. American Book, 1930-31.
- Theisen, Wm. W., and Leonard, S. A. *Real Life Stories*, Books VII and VIII. Macmillan, 1929.

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